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American Foundryman

AMERICAN FOUNDRYMEN'S ASSOCIATION · FOUNDED 1896

...VITIES

March
1940

An Exhibitor Speaks

SPEAKING of exhibits of equipment and supplies for the foundry and allied industries, it may be interesting to note that the 1940 Foundry and Allied Industries Show to be staged in the International Amphitheatre, Chicago, May 4 to 10, is the 29th organized showing of equipment and supplies in conjunction with annual A.F.A. conventions. The fact that these shows have grown year by year, not only in attendance but in exhibition space, and that practically every worthwhile development and improvement in foundry equipment was first unveiled at such a show, attests to their value.

In fact, it is the joint value to exhibitor and attender that is the justification for these exhibits. From the exhibitor point of view, it enables him to show and demonstrate his particular equipments to a large number of buyers and potential buyers. Many attend exhibits just to investigate various types of equipment in which they are interested. They come at their own expense, for the purpose of either seeing a particular piece of equipment demonstrated or to see the several types available for their particular requirements. Therefore, they are in a receptive mood for the proper sales message. In some cases, it is the opportune time to close a contract. In other instances, it provides the opportunity to plant the seed which eventually may bear fruit.

Another point which increases the value of these Foundry Shows to the exhibitor is the fact that they are held, in turn, in the leading foundry centers throughout the country. This practice gives the foundrymen in those localities the opportunity to see the developments in equipment and supplies periodically without too much expense and without too much time elapsing between showings. It has been conclusively demonstrated by attendance surveys that the majority attendance at any one show is obtained from within a radius of 400 to 500 miles of the convention city. Thus at each show, the exhibitor is showing and demonstating his equipment to practically a new group of individuals, or at least to many who have not had an opportunity to see the new equipment or improvements on standard equipment for a period of several years.

This year, in Chicago, the largest Foundry and Allied Industries Show ever held is anticipated. It has been two years since the last Show was held in Cleveland and it has been many years since other than limited hotel shows were held in Chicago. With the development of Chapters of the Association in leading foundry centers throughout the country, interest is greater than ever before.

Tom Kaveny

THOMAS KAVENY, Director,
American Foundrymen's Association.

Mr. Kaveny, a director of A.F.A., is president, Herman Pneumatic Machine Co., Pittsburgh, Pa. He attended Cornell University, Ithaca, N. Y., from which he was graduated in engineering. He then became affiliated with the N. K. Fairbanks Co., Chicago, Ill., and worked there for 17 years, rising to the position of sales manager. He resigned this connection to become affiliated with the Herman Pneumatic Machine Co., of which he has been president for 23 years. Mr. Kaveny has been an active member of the Association for over 20 years.

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American Foundryman

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Tentative Convention Program Indicates Variety of Subjects for Discussion

WITH the Foundry and Allied Industries Show opening Saturday, May 4, for a preview arranged especially for the foundrymen in the general Chicago area, the 44th Annual Convention promises to be one of the best attended and the exhibits the most numerous and interesting ever held by the American Foundrymen's Association.

While the Foundry Show will open Saturday, May 4, the sessions of the convention will start Monday, May 6, continuing through the week with both the convention and show closing on the afternoon of Friday, May 10. The exhibits will be on display in the International Amphitheatre, one of the best arranged buildings in the country for housing such a large industrial exposition.

Headquarters

The convention sessions held during exhibition hours will be in the meeting rooms of the Stock Yard Inn and the Saddle and Sirloin Club building, conveniently adjacent to the Amphitheatre, where the convention headquarters will be located. Evening sessions will be held at the Palmer House, the downtown headquarters of the convention. Registration for men will be at the Amphitheatre and for the ladies at the Palmer House.

Convention Events

A complete schedule of the week's events is shown on the next page. This program has been arranged with general interest sessions throughout the week. Sessions of particular interest to the malleable and non-ferrous divisions have been scheduled for the first part of the week, the steel and gray iron divisions holding their sessions the latter part of the week.

Plant Visitation

The chapter committee has arranged for many of the interesting industrial plants and foundries to be opened for plant inspection during the week. One general group trip has been scheduled for the afternoon of Monday, May 6, to the works of the Wisconsin Steel Division, International Harvester Company, where the coke ovens, blast furnaces and steel mills will be inspected. Some other plants which will be open to inspection during the week are:

Carnegie-Illinois Steel Corp., South Works.
Interlake Iron Corp.
Crane Co.
Link Belt Co.
Continental Roll & Steel Foundry Co.
American Steel Foundries.
Allied Steel Casting Co.
Griffin Wheel Co.
Western Electric Co.
Whiting Corp.
National Malleable & Steel Castings Co.
Chicago Malleable Castings Co.
McCormick Works and Tractor Plant of International Harvester Co.

Demonstration of Crystallization of Metals

An instructional feature of the convention of interest to shop and technical men alike will be the demonstration of crystal formation of metals. Through the use of a microscope and projector, Dr. C. W. Mason, Cornell University, Ithaca, N. Y., will show, on a screen, material freezing from the molten to the solid state, illustrating the types of metal formations with which the foundryman deals.

Shop Courses and Technical Sessions

Shop courses on sand control and gray iron practice are scheduled for four sessions each. These will deal with the fundamental problems of every day foundry practice, the discussion leaders being picked from leading men of the industry who have given extensive attention to these subjects.

Apprentice and foreman training, cost methods, pattern making, plant equipment, foundry safety and hygiene, time study, sand research and refractories are subjects to be covered by papers at general foundry interest sessions. In addition special problems of the malleable, non-ferrous, steel and gray iron foundries will be covered in the forty papers and committee reports to be presented during the week. Some of the papers to be discussed follow:

Partial List of Papers

Cupola Operation, by Donald J. Reese, International Nickel Co., N. Y. C.; John Grennan, University of Michigan, Ann Arbor; and S. C. Massari, Association of Manufacturers of Chilled Car Wheels, Chicago.

Cooling and Storage of Foundry Sands, by H. L. McKinnon, C. O. Bartlett & Snow Co., Cleveland, O.

Foundry Equipment at Indianapolis Plant, International Harvester Co., by F. H. Amos, International Harvester Co., Chicago.

Composite Molding in a Malleable Foundry, by S. Healy, Saginaw Malleable Iron Div., General Motors Corp., Saginaw, Mich.

An Unusual Structure in Malleable Iron, by Enrique Touceda, Malleable Founders' Society, Albany, N. Y.

Pattern Coating Materials, by Frank Cech, Cleveland Trade School, Cleveland, O.

Effects of Manganese on Second Stage Graphitization, by D. P. Forbes, Gunite Foundries Corp., Rockford, Ill.

Heat Treatment of Malleable Iron, by R. J. Cowan, Surface Combustion Corp., Toledo, O.

Refractories for Cupola Service, by J. A. Bowers, American Cast Iron Pipe Co., Birmingham, Ala.

Linings for Desulphurizing Ladles, by John Lowe, Vilter Mfg. Co., Milwaukee, Wis.

Flowability of Foundry Sands, by P. E. Kyle, Massachusetts Institute of Technology, Cambridge, Mass.

Effect of Sand Conditions on Properties of Castings, by H. L. Womochel and C. C. Sigerfoos, Michigan State College, E. Lansing, Mich.

Application of External Chills to Steel Castings, by W. H. McKee, Key Co., E. St. Louis.

Application of Controlled Directional Solidification to Large Steel Castings, by J. A. Duma and S. W. Brinson, Norfolk Navy Yard, Norfolk, Va.

Effect of Sulphur on Properties of Electric Furnace Cast Iron, Fulton Holtby, University of Minnesota, Minneapolis.

Tentative Schedule of Sessions
1940 Annual A.F.A. Convention
May 4-10

SATURDAY, MAY 4

1:00 to 10:00 P. M.—Chicago District Day—A Preview of Foundry and Allied Industries Show. Planned for Plant Executives and Shop Men of the Chicago Area.

MONDAY, MAY 6

9:00 A. M. to 5:00 P. M.—Foundry and Allied Industries Show open. Committee meetings and plant visits.
11:00 A. M.—Gray Iron Shop Course (Session 1—*Cupola Operation*).
1:00 P. M.—Special Group Plant Visit—Wisconsin Steel Div., International Harvester Co., returning by way of Museum of Science and Industry.
7:00 P. M.—Engineering and Training Instructors' Annual Dinner.
8:00 P. M.—Plant and Plant Equipment Session.

TUESDAY, MAY 7

9:00 A. M. to 5:30 P. M.—Foundry and Allied Industries Show open.
9:00 A. M.—Sand Shop Course (Session 1—*Non-Ferrous Practice*).
10:00 A. M.—Apprentice Training Session.
10:00 A. M.—Malleable Cast Iron Session.
10:00 A. M.—Non-Ferrous Session.
2:00 P. M.—Patternmaking Session.
2:00 P. M.—Non-Ferrous Session.
2:00 P. M.—Malleable Session.
4:00 P. M.—Gray Iron Shop Course (Session 2—*Cupola Control*).
5:00 to 7:00 P. M.—Open House, Chicago Chapter.
8:00 P. M.—Refractories Session.
8:00 P. M.—Crystallization Demonstration No. 1.

WEDNESDAY, MAY 8

8:30 A. M.—Sand Shop Course (Session 2—*Malleable and Gray Iron Practice*).
9:30 A. M. to 11:00 A. M.—Annual Business Meeting and Board of Awards Lecture.
11:00 A. M. to 6:00 P. M.—Foundry and Allied Industries Show open.
12:30 P. M.—Non-Ferrous Division Round Table Luncheon.
12:30 P. M.—Malleable Division Round Table Luncheon.
2:00 P. M.—Foundry Costs Session.
2:00 P. M.—Sand Research Session.
4:00 P. M.—Gray Iron Shop Course (Session 3—*Cupola Operation*).
7:00 P. M.—Non-Ferrous Division Annual Dinner.
8:00 P. M.—Crystallization Demonstration No. 2.

THURSDAY, MAY 9

9:00 A. M. to 5:30 P. M.—Foundry and Allied Industries Show open.
9:00 A. M.—Sand Shop Course (Session 3—*Core Room Practice*).
10:00 A. M.—Foreman Training Session.
10:00 A. M.—Steel Session.
10:00 A. M.—Job Evaluation Session.
10:00 A. M.—Sand Research Session.
12:30 P. M.—Gray Iron Division Luncheon.
2:00 P. M.—Gray Iron Session.
2:00 P. M.—Steel Session.
2:00 P. M.—Safety and Hygiene Session.
4:00 P. M.—Gray Iron Shop Course (Session 4—*Graphite Additions to Ladle Iron*).
4:30 P. M.—Crystallization Demonstration No. 3.
7:00 P. M.—Annual Dinner.

FRIDAY, MAY 10

9:00 A. M. to 3:30 P. M.—Foundry and Allied Industries Show open.
9:00 A. M.—Sand Shop Course (Session 4—*Steel Shop Practice*).
10:00 A. M.—Gray Iron Session.
10:00 A. M.—Steel Session.
12:30 P. M.—Steel Division Round Table Luncheon.
2:00 P. M.—Gray Iron Session.
3:30 P. M.—Foundry and Allied Industries Show closes.

Desulphurizing Cast Iron, by W. Levi, Lynchburg Foundry Co., Lynchburg, Va.

A Safety Program for Small Foundries, by P. E. Rentschler, Hamilton Foundry & Machine Co., Hamilton, O.

Melting Copper-Base Alloys to Retain Physical Properties, by W. B. George, R. Lavin & Sons, Chicago, Ill.

Improvements in Gas Melting Furnaces in the Non-Ferrous Foundry, by E. W. Williams, Equitable Gas Co., Pittsburgh, Pa.

Damping Capacity, Electrical and Thermal Conductivities and Endurance Properties of Some Gray Irons, by E. C. Kron and C. H. Lorig, Battelle Memorial Institute, Columbus, O.

Tendency of Cast Irons to Seize Under Sliding Friction, by A. H. Dierker, Ohio State University, Columbus, O.

Formation of Various Types of Graphite Patterns in Gray Cast Iron, by C. D'Amico and R. Schneidewind, University of Michigan, Ann Arbor, Mich.

The Pearlitic Interval in Gray Iron, by Alfred Boyles, Battelle Memorial Institute, Columbus, Ohio.

Steel Castings and Welding, by J. W. Bolton and A. J. Smith, Lunkenheimer Co., Cincinnati, O.

A Method of Determining Plasticity, by R. G. McElwee, Vanadium Corp. of America, Detroit, and R. Schneidewind, University of Michigan, Ann Arbor, Mich.

Wear of Cast Iron Cylinder Bores, by E. K. Smith, Electro-Metallurgical Co., Detroit.

Nominating Committee Meets in Chicago

MEMBERS of the Nominating Committee of the American Foundrymen's Association met Jan. 31, at the Union League Club, Chicago, in accordance with the By-Laws of the Association, to nominate officers and directors for the year 1940-41. The By-Laws state, Article IX, Section 3, that the Nominating Committee shall meet at a time and place designated by the chairman, at least 90 days prior to the Annual Business Meeting and shall name candidates for the office of president, vice president, and for each of the directorships that shall become vacant.

According to Article IX, Section 1, the committee shall be composed of the three last living past presidents and four other members elected by the Association. The senior past president committee member is the chairman.

At the previously mentioned meeting the following were nominated for the following offices:

For President to Serve for One Year — L. N. Shannon, Vice President, Stockham Pipe Fittings Co., Birmingham, Ala.

For Vice President to Serve for One Year — H. S. Simpson, President, National Engineering Co., Chicago.

For Directors to Serve for Three Years—George W. Cannon, Campbell, Wyant & Cannon Foundry Co., Muskegon, Mich.

B. D. Claffey, General Malleable Corp., Waukesha, Wis.

Harold J. Roast, Canadian Bronze Co., Ltd., Montreal, Canada.

L. P. Robinson, Werner G. Smith Co., Cleveland, Ohio.

H. S. Washburn, Plainville Casting Co., Plainville, Conn.

Members of the nominating Committee were as follows:

Past President James L. Wick, Jr., Falcon Bronze Co., Youngstown, Ohio, *Chairman.*

Past President Marshall Post, Birdsboro Steel Foundry & Machine Co., Birdsboro, Pa.

Past President H. Bornstein, Deere & Co., Moline, Ill.

R. F. Harrington, Hunt-Spiller Mfg. Corp., Boston, Mass.

J. W. Kelin, Federated Metals Div., American Smelting & Refining Co., St. Louis, Mo.

Carl F. Joseph, Saginaw Malleable Iron Div., General Motors Corp., Saginaw, Mich.

W. H. Parker, American Steel Foundries, Chicago, Ill.

According to Article IX, Section 5, additional nominations may be made at any time 30 days prior to the Annual Business Meeting by petition signed by at least 35 members in good standing in the Association.

Patterns for Apprentice Contest

AS announced in previous issues of the *American Foundryman*, the A.F.A. apprentice training committee is again sponsoring contests in gray iron molding, steel molding, nonferrous molding and pattern making. Many local foundry groups and plants have started their competitions, the A.F.A. committee supplying patterns and blueprints.

The winning castings and patterns of each local competition will be sent to Chicago for display during the Annual A.F.A. Convention May 4 to 10, at which time a national committee of judges will select three entries in each group for national awards.

This year the patterns for the molding contest have been made by the pattern-making students of the David Rankin, Jr. School of St. Louis, working under the supervision of Thomas Ross, pattern making instructor. Patterns for the previous two years' competitions were made by the apprentice students at the Cleveland Trade School, under the supervision of Frank Cech, pattern making instructor at that school.

Any firm having apprentices desiring to compete should address the A.F.A. Apprentice Committee, 222 W. Adams St., Chicago, Ill.

Merchandising Jobbing Castings†

By Henry S. Washburn,* Plainville, Conn.

AS AN introduction to the subject, let me give a brief outline of our Industry. The 1939-1940 edition of *Penton's Foundry List* shows a total of 4,776 foundries in the U. S. and 457 in Canada, or a total of 5,233. This total includes 3,394 gray iron, 1,462 non-ferrous, 327 steel, and 149 malleable foundries.

These foundries have available 16,781 melting units — cupolas, electric furnaces, crucible furnaces, open hearths, air furnaces, etc.—with an annual melting capacity of 25,869,000 tons or an annual castings capacity of 16,892,000 tons. They represent a capital investment of approximately one billion dollars, of which considerably more than half is accounted for by gray iron foundries; they employ some 325,000 workers and last available records show the value of castings produced in one year equalled 1.2 billion dollars.

Average Foundry Is Small

We are a sizable industry. Lest you feel I am trying to convey the idea the average jobbing foundry is as big as the Steel Corporation, let me add just a few more figures. I represent the jobbing gray iron foundry and, as I prefer to speak only of that which I am personally familiar, the figures in Table 1 have to do with that branch of the industry, but on the whole they represent fairly accurately the entire jobbing group.

Table 1

Employment in Gray Iron Jobbing Foundries

Percent of Gray Iron Jobbing Foundries	Number of Men Employed
26.2	1 to 25
38.9	26 to 50
19.8	51 to 100
11.1	101 to 200
4	over 200

One natural conclusion to be drawn from the figures of Table 1 is that God must love us because there are so many of us and the President must love us because we are so small.

Large Capacity Produces Selling Problem

Generally speaking, these jobbing foundries are located in or near manufacturing centers. In one manufacturing city with a population of 317,000, there are 22 jobbing foundries. Another grouping would consist of one foundry in each of several small cities or towns in a limited area, each of them drawing work from this same area. Of course, the jobbing foundry cannot make stock during quiet periods; it can only run on actual orders. When we consider that the annual castings capacity is 16,892,000 tons, that the average annual production of castings is 8,446,000 tons, just 50 per cent of capacity, when we recall the grouping of foundries in rather limited areas and the fact that in busy periods and in dull periods the jobbing foundry must have actual orders on which to run, I think we can see the temptation in the more quiet periods to throw costs to the winds in the scramble to keep the plant operating. This brings us to the heart of our problem—"The Merchandising of Jobbing Castings."

We will all agree that successful merchandising provides work for the manufacturing departments at a selling price which enables payment of fair wages to labor, provides for a fair return on invested capital and allows for a reasonable addition to surplus to carrry us through the periods of lower production.

I do not know the make-up of this audience in terms of sellers of castings and purchasers of castings and I do not want to offend, but, in my opinion, the logical, quick and only satisfactory method to accomplish these ends is by price fixing.

Interpretation of Price Fixing

This term "price fixing" may be interpreted in various ways. One interpretation, perhaps the most common, has to do with a group of producers in a certain territory agreeing that castings of various types will not be sold by any member of that group below a price that is mutually agreed upon. I do not subscribe to that method in any sense. In the first place, the Attorney General does not seem to have too friendy a feeling for people who make their own interpretation of Law if these interpretations do not agree with his own. From every other standpoint I believe such practice is unsound. Such a practice holds an umbrella over the head of the least efficient in the group which usually results in prices that are so high competition is attracted from surrounding areas and in many cases the purchaser is driven to seek other materials. The gray iron foundry industry has enough legitimate competition from other metals and products without literally compelling its customers to seek other products.

Not too long ago we saw the paradox of some industrialists asking that government allow them the blessings of individual opportunity in the operation of their businesses and other industrialists imploring government to take away this liberty in return for government assistance in increasing prices.

I wonder if this division would not tie in, in a general way, with those who favor the above method of price fixing and those who do not.

Suppose we approach this problem from the standpoint of price fixing between the foundry

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†Presented at the Regional Conference of the Northern and Southern California Chapters, American Foundrymen's Association, held in conjunction with the 16th Annual Iron, Steel and Allied Industries Conference, Del Monte, Calif., Feb. 8, 1940.

and the purchaser of castings. Let us consider two important points from the standpoint of our customers.

The first is that if prices are reduced in dull periods to a point all out of reason when compared with actual cost, then in busy periods they must be increased to a point all out of reason when compared with actual cost. I cannot speak for the foundrymen on the Pacific Coast, but in my section of the country we have seen this happen time and again.

The second point is that if the customer has bought castings at say $0.04 per pound in a dull period and sees that price advance to $0.09 per pound at the top of the business cycle, he feels he is being unfairly treated and, as soon as business starts on the down-grade, he requests quotations from other foundries and begins the process of moving his patterns from one foundry to another. In my section of the country, we have seen *this* happen time and again.

Referring to point one, there is no justification for a spread of from $0.04 per pound to $0.09 per pound. We have recently adjusted our selling prices to cover an increase of about $6.00 per ton in the cost of iron and steel scrap and an increase of $2.00 per ton in cost of pig iron—rather stiff advances in these two important materials. The increase in our selling prices amounted to $0.17 per hundred pounds or $0.0017 per pound — less than 2/10 of a cent. Our prices were satisfactory prior to these advances in material cost so we had only to make an advance to cover our actual increase in cost and we can justify 2/10 of a cent per pound.

Referring to point two, the purchaser of castings, especially castings which are to be machined, cannot afford to periodically move his patterns from one foundry to another.

Cost System Important in Foundries

From the foundry standpoint, the first requirement is to have a cost system. I recently contacted a firm who had been in business 83 years; whose product was made entirely of gray iron made in their own foundry; whose annual sales had passed the seven million mark and they had never had a cost system. I attended the funeral services.

The combined Cost Committees of the A.F.A. and the Gray Iron Founders' Society have available the details of a simplified cost system—gratis to members and a dollar or two to non-members —that can be used even by the 26 per cent who employ from 1 to 25 men. There is no excuse for any jobbing foundry not being able to figure cost when asked to quote, regardless of what he feels he must use for a selling price to get the job.

An Example of Price Factors

Now, let us take the next step, and if I speak of personal experiences, it is only that I prefer to refer to facts that I know rather than to speak in generalities. We were asked to quote from blueprint on pattern equipment and castings for a water jacketed, pressure tested cylinder head. We estimated, if there were no complications about which we did not know, we could make the castings for $0.05¾ per pound.

A call on the purchasing agent revealed the following facts: (1) This was not a new job, (2) they used quite a large quantity of this particular casting, (3) the pattern had been in several foundries.

This company was trying to obtain a lower price than they were then paying and our price of $0.05¾ was mildly attractive. They had some of these castings going through the machine shop and we were permitted to see the machine operation. A very costly machine operation was done on a Bullard Multimatic, the machining cost being about eight times the cost of the casting, and we found out in the machine shop that they seldom ran less than a 40 per cent loss due to casting defects which only showed up after castings were machined.

We were given an order to make up pattern equipment with the understanding we would learn to make the casting, they to pay us our actual cost until the job was right and we would then quote definite price. We have since made several thousand castings from this pattern; the machine shop loss is well under 2 per cent; they pay us just over 11 cents per pound and their cost for the casting plus machining has been considerably reduced.

Seller Cooperation and Price Reduction

Twenty years ago we took on a large volume of castings from a customer at a nominal price, the price to be adjusted after we had developed actual cost experience. This customer has spent thousands of dollars in new pattern equipment and the work is still and always will be in process of development. An inexpensive rigging today must be replaced tomorrow by more expensive equipment if the casting shows sufficient increase in volume to justify putting it on a faster machine. We interested them in a heat treating department in their shop for the heat treating of certain gray iron castings which has paid them good dividends. They are always willing to invest in proper equipment when shown the possible saving because they get the saving. The percentage of profit we agreed on as due us twenty years ago holds good today, although our price to them and their cost of castings plus machining cost has shown a consistent reduction. We are familiar with the machine operation on each casting and the use to which each casting is put. We suggest pattern changes that reduce machining, we suggest different mixtures of iron and certain alloys for certain castings that result in better finished product.

This continued close contact with each of our customers necessitates our having a local business. Our most distant customer is 80 miles away and the most of our business is within a radius of 45 miles from our foundries.

I am talking now from the standpoint of the average jobbing foundry—not the foundry making cast iron pipe or brake shoes or other spe-

cialties. There is nothing new in what I have said, but perhaps the principle is so old it may have been forgotten. As far as I am concerned, I believe it is the only basis for certain, profitable price fixing. Profitable to the foundry and profitable to the purchaser and a solution to a highly competitive condition because of the number and location of these competitors.

Where Buyer Considers Price Only

We sometimes have inquiries where the only consideration is price. We tell the one making the inquiry that is one thing we do not sell but can refer him to a foundry that would be interested in his proposition and sometimes even 'phone and make an appointment for him. As long as the supply houses are willing to compromise this foundry's indebtedness at regular intervals and then start off on a new line of credit, it works out nicely for all concerned.

I do not claim this to be the only policy that works. Far from it. But if it does not result in maximum profits, it has some compensating features. Over a period of years, some of my closest personal friends have been customers with whom I have had these close business connections. During the bottom of the major depression, our customers would not accept the minimum prices to which they were entitled under our price fixing arrangement on the grounds that volume was so small it would not mean much to them anyway and they did not want anything to happen to their source of supply because of low production.

Improvement in Methods

One thing is missing in this picture. I have tried to show that the purchaser, whose casting requirement is important to him, cannot afford to change from one foundry to another and go through the process of having the new foundry learn to make the work. It is equally true that the foundryman cannot afford to have the patterns on which he has spent so much effort taken out of his shop. The foundryman may have the entire confidence of his customer regarding costs and effort, but if he is not equipped to give his customer the benefit of modern foundry methods then he cannot expect to hold the work.

If he is making a casting at an actual cost of $0.08 per pound and a competitor, because of better methods, can make it at an actual cost of $0.05 per pound, then he is not entitled to the work. How does the customer know he is benefitting from the best in modern foundry production and practice? The part which I have left out of the picture is the part reserved for the American Foundrymen's Association.

The American Foundrymen's Association

This Association was started 44 years ago. It is not a trade association. It has nothing to do with legislative matters. Its entire purpose is to improve foundry practice and the quality of cast metals and to enlarge their uses in industry.

Its membership is made up of several thousand individuals and firms engaged in, or having interest in, the manufacture of castings. Many members actually are engaged, as members of live committees, in research work for the general good of our industry. Each year the Association holds an Annual convention where technical papers are presented on all phases of our work, arrangements are made for plant visitations, and ample time allowed for discussion.

At frequent intervals the Association conducts an exhibit of foundry equipment and materials where the latest developments in foundry equipment are displayed by the manufacturers. Here the foundry executive, the superintendents, the foremen may discuss with the designers the intimate details of cost and method of pattern rigging necessary for use with modern molding machines and may talk freely with foundrymen who have had these new machines in operation. Our next Annual Convention and Exhibit will be held May 4 to 10 in the International Amphitheatre, Chicago. It gives promise of being the largest to date and will attract from five thousand to six thousand foundrymen from all parts of the country, and from abroad.

As too many representatives from some companies cannot attend these Annual Conventions when the convention city happens to be a long distace from their places of business, local A.F.A chapters have been formed in all parts of the country. At their regular monthly meetings, the same type of papers are presented as at the Annual Conventions and these chapter meetings make possible the attendance of foremen, junior foremen and in some cases apprentices.

In addition to regular monthly meetings, many chapters are holding annual regional conferences in cooperation with technical schools. Among other advantages, this is insuring cooperation from these technical schools in our research projects and their help in developing from among the under-graduates the foundry engineers of tomorrow.

The Northern and Southern California Chapters of A.F.A. are holding here at Del Monte a Pacific Coast Regional Meeting where papers will be presented by men outstanding in their particular fields. In addition to papers relating to technical problems, one discussion will deal with hygiene in the foundry and this will be lead by an outstanding national authority on industrial hygiene, dust control and occupational disease. The dues of the Association are kept sufficiently low so that no foundry is kept out on that score.

Assurance of Information on New Developments

Here, then, is the answer to the question raised above—How does my customer know he is benefitting from the best in modern foundry production and practice? The progressive, wide-awake jobbing foundryman, large and small, has at his command the entire facilities of the A.F.A. if he will devote the energy and study necessary to take advantage of them in his own operation. We do not all develop production facilities for the same

(Concluded on Page 11)

NEW MEMBERS

Birmingham Chapter

American Castings Co., Birmingham, Ala. (J. O. Jackson, President.)*

W. M. Mobley, Chemist, Alabama By-Products Corp., Birmingham, Ala.

Central Indiana Chapter

Arden H. Barton, Chemist, International Harvester Co., Indianapolis, Ind.

Henry F. Bayer, Assistant Foreman, International Harvester Co., Indianapolis, Ind.

Citizens Gas & Coke Utility, Indianapolis, Ind. (B. P. Mulcahy, Research Engineer.)*

Emmett B. Haas, Foreman, Swayne, Robinson & Co., Richmond, Ind.

Don H. Hays, Pendleton, Ind., Salesman, Corn Products Sales Co., New York, N. Y.

Inter-State Foundry Co., Inc., Indianapolis, Ind. (Leo R. Meyer, President.)*

William F. McGlasson, Secretary, Inter-State Foundry Co., Inc., Indianapolis, Ind.

John Millar, Foundry Foreman, Roots Connersville Blower Corp., Connersville, Ind.

C. L. Penny, Foreman, Swayne, Robinson & Co., Richmond, Ind.

Chester D. Sears, Chemist, International Harvester Co., Indianapolis, Ind.

Clyde D. Smith, Foreman, Swayne, Robinson & Co., Richmond, Ind.

Gerald W. Smith, Sand Tester, Swayne, Robinson & Co., Richmond, Ind.

Carl Toth, Chemist, National Malleable & Steel Castings Co., Indianapolis, Ind.

Central New York Chapter

Harmon E. Lewis, Bath, N. Y., Sales Representative, Simplicity Engineering Co., Durand, Mich.

Chicago Chapter

Thomas F. Lewis, Superintendent, American Brake Shoe & Foundry Co., Melrose Park, Ill.

Cedric G. Mickelson, Research Metallurgist, American Steel Foundries, East Chicago, Ind.

J. Vincent Olle, Metallurgist, Chicago Hardware Foundry Co., No. Chicago, Ill.

Herman J. Pfeifer, Jr., Electro Metallurgical Co., Chicago, Ill.

F. S. Sutherland, Plant Metallurgist, Continental Roll & Steel Foundry, East Chicago, Ind.

Eugene H. Weak, Electric Furnace Melter, American Steel Foundries, East Chicago, Ind.

Cincinnati Chapter

John M. Adams, Cincinnati, O., Representative, Cleveland Pneumatic Tool Co., Cleveland, Ohio.

R. E. Ashburn, Foundry Foreman, Sawbrook Steel Castings Co., Lockland, Ohio.

J. B. Caine, Metallurgist, Sawbrook Steel Castings Co., Lockland, Ohio.

Clarence A. Gehrman, Sales Representative, Sterling Wheelbarrow Co., Milwaukee, Wis.

Julius E. Stoffel, Foreman, Schaible Foundry & Brass Works, Cincinnati, Ohio.

Detroit Chapter

Gilbert K. Eggleston, Metallurgist, Detroit Lubricator Co., Detroit, Mich.

E. J. Woodison Co., Detroit, Mich. (Elton Rogers, Manager.)*

Donald Lee Yost, Foundry Metallurgist, Budd Wheel Co., Detroit, Mich.

George H. Zirker, Detroit, Mich.

Metropolitan New York Chapter

Chester H. Jones, Eastern Manager, Hydro Blast Corp., Upper Montclair, N. J.

Tzyh-Shin Wang, Ph.D., Mechanical Engineer, c/o China Institute, New York, N. Y.

Northeastern Ohio Chapter

Walter Bonsack, Chief Metallurgist, The National Smelting Co., Cleveland, Ohio.

Cleaveland Colburn, Metallurgist, Sterling Foundry Co., Wellington, Ohio.

Harshaw Chemical Co., Cleveland, Ohio. (A. S. Armstrong, Foundry Foreman.)*

Daniel T. O'Brien, Scrap Broker, Summer & Co., Cleveland, Ohio.

Frank J. Stanley, General Superintendent, Crucible Steel Casting Co., Cleveland, Ohio.

Northern California Chapter

J. T. McCready, Salesman, Simonds Saw & Steel Co., San Francisco, Calif.

B. F. McDonald, Super Mold Corp. of California, Lodi, Calif.

Alvin B. Pitman, San Francisco, Calif., Field Engineer, Abrasive Co., Philadelphia, Pa.

Ontario Chapter

John C. Stavert, Babcock - Wilcox & Goldie-McCullough, Ltd., Galt, Ont., Canada.

Quad City Chapter

Loris B. Manderscheid, Davenport, Iowa, Assistant to Foundry Supt., J. I. Case Co., Rock Island, Ill.

Fred Olson, Chemist, Union Malleable Iron Co., East Moline, Ill.

St. Louis Chapter

Duncan Foundry & Machine Works, Inc., Alton, Ill. (George D. Duncan, Gen. Superintendent.)*

Southern California Chapter

Pacific Gas Radiator Co., Huntington Park, Calif. (J. B. Marchand, Purchasing Agent.)*

Clyde Pettigrew, Superintendent, Reliable Aluminum Ware Co., Los Angeles, Calif.

Wisconsin Chapter

Jacobs Metals Corp., Milwaukee, Wis. (Harry E. Jacobs, President.)*

R. C. Woodward, Chief Metallurgist, Bucyrus-Erie Co., So. Milwaukee, Wis.

*Company Members.

(Continued on Page 11)

The Model Foundry Is Enclosed in Glass and Is Air-Conditioned.

Foundry Exhibit at Museum to Educate Public About Casting of Metals

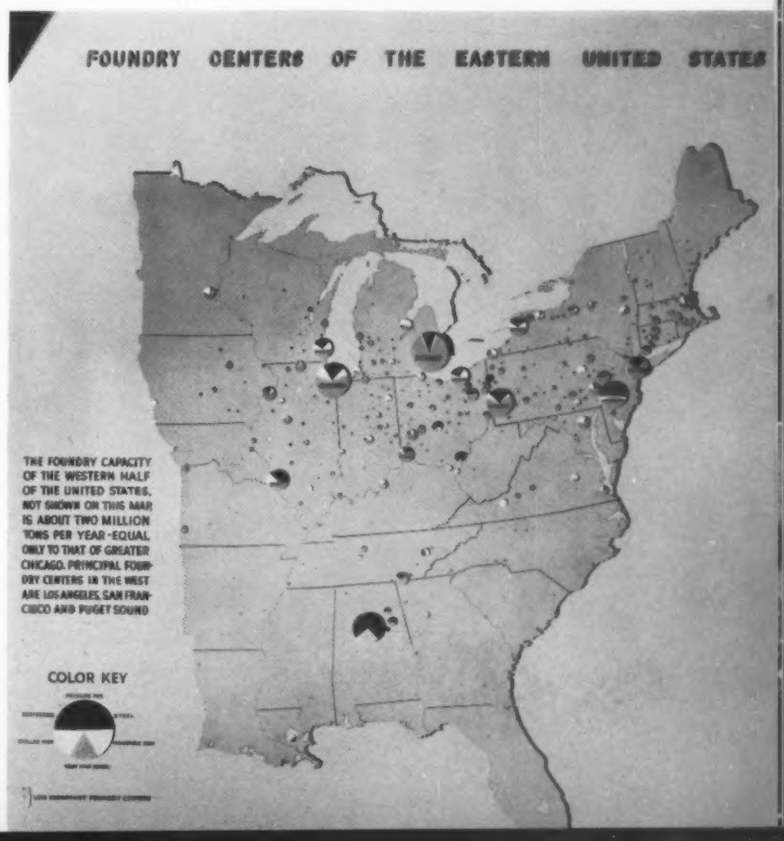
ON Nov. 9, 1939, during the Chicago Chapter Regional Conference at the Museum of Science and Industry, Jackson Park, Chicago, "a foundry operating exhibit," which hundreds of thousands of people will see annually, was dedicated. The Hall of Metals, where the exhibit is located, is not yet open to the public but will be opened before the 1940 Annual Convention of the American Foundrymen's Association in Chicago, May 4 to 10. During this time an organized trip to the Museum and the Foundry Exhibit is planned. Even though only a small section of the Museum was opened to the public last year, over 500,000 people were admitted. When the entire Museum is open, there is every reason to believe that the number will be increased considerably.

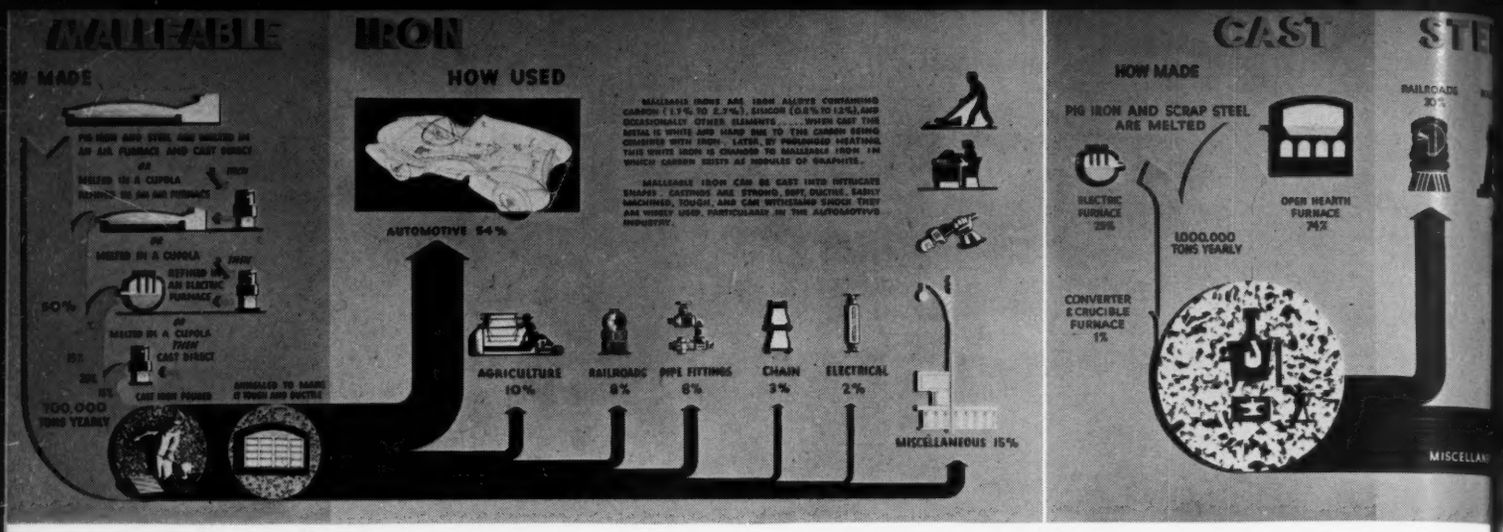
The term "foundry operating exhibit" really does not do justice to the project. In reality, it is a miniature operating foundry, equipped with the latest equipment for the production of castings. In fact, castings are produced which eventually will find their way into many of our homes.

A Short History of the Project

It should be of interest to many to know how this Foundry Exhibit was evolved. Approximately 10 years ago, shortly after the Museum of Science and Industry was organized in Chicago, the American Foundrymen's Association was approached to provide a foundry exhibit at the Museum. No special instructions as to the type of exhibit desired were given by the Museum, but a possible operating exhibit was discussed. Final decision on the type was left to the discretion of the Association. A committee was appointed as a function of the National Association. However, because the Museum was reconstructing the Fine Arts Building of the World's Columbian Exposition in Jackson Park, Chicago, as its permanent location, for several years the work of the committee was more or less of a contact nature.

With the development of chapters of the Association, the first of which was organized in 1934,


FOUNDRY CENTERS OF THE EASTERN UNITED STATES
THE FOUNDRY CAPACITY OF THE WESTERN HALF OF THE UNITED STATES, NOT SHOWN ON THIS MAP, IS ABOUT TWO MILLION TONS PER YEAR - EQUAL ONLY TO THAT OF GREATER CHICAGO. PRINCIPAL FOUNDRY CENTERS IN THE WEST ARE LOS ANGELES, SAN FRANCISCO AND PUGET SOUND
COLOR KEY



Charts Showing Tonnage, Methods of Manufacture and Applica

in Chicago, the work in connection with the exhibit was passed from the National organization to the Chicago Chapter because members of a chapter committee would be in closer contact with all problems and could function better than a committee whose members were located throughout the country. Then, too, local civic pride would play a part in making the committee an active one.

In 1935, the Museum of Science and Industry Exhibit Committee of the Chicago Chapter began to function. A meeting was held with the Museum staff and a location in the gallery of the main section of the Hall of Metals was chosen for the display. Plans were made for an operating exhibit and manufacturers of equipment and supplies were contacted and asked to cooperate.

Originally only a section of the gallery was set aside for the exhibit but as plans progressed, more and more space was required until now the display covers practically the entire gallery. After the plans were well under way, it was thought that "still" exhibits of the products and processes of the foundry industry would add interest. The various trade associations of the industry were contacted by the committee and agreed to cooperate. Among the groups which contributed to the still exhibits were: Gray Iron Founders' Society, Cast Iron Pipe Research Association, Steel Founders' Society of America, Malleable Founders' Society and Association of Manufacturers of Chilled Car Wheels. Other still exhibits were contributed by individual companies.

Another View of Model Foundry Taken in Opposite Direction From Illustration.

The Operating Foundry

This model foundry is equipped to produce commercial castings. For convenience, so far as the operation of the exhibit is concerned, metal is melted in a direct arc furnace, although a cupola also is available. Molds are made on machines and are carried by gravity on conveyors to the pouring stations. Molten metal is tapped from the furnace into a ladle suspended from an overhead monorail system and transported to the pouring station where the molds are poured. The castings are shaken out on a mechanism for that purpose and are blasted and cleaned in a machine which performs both operations simultaneously. Cores are made in a core-blowing machine.

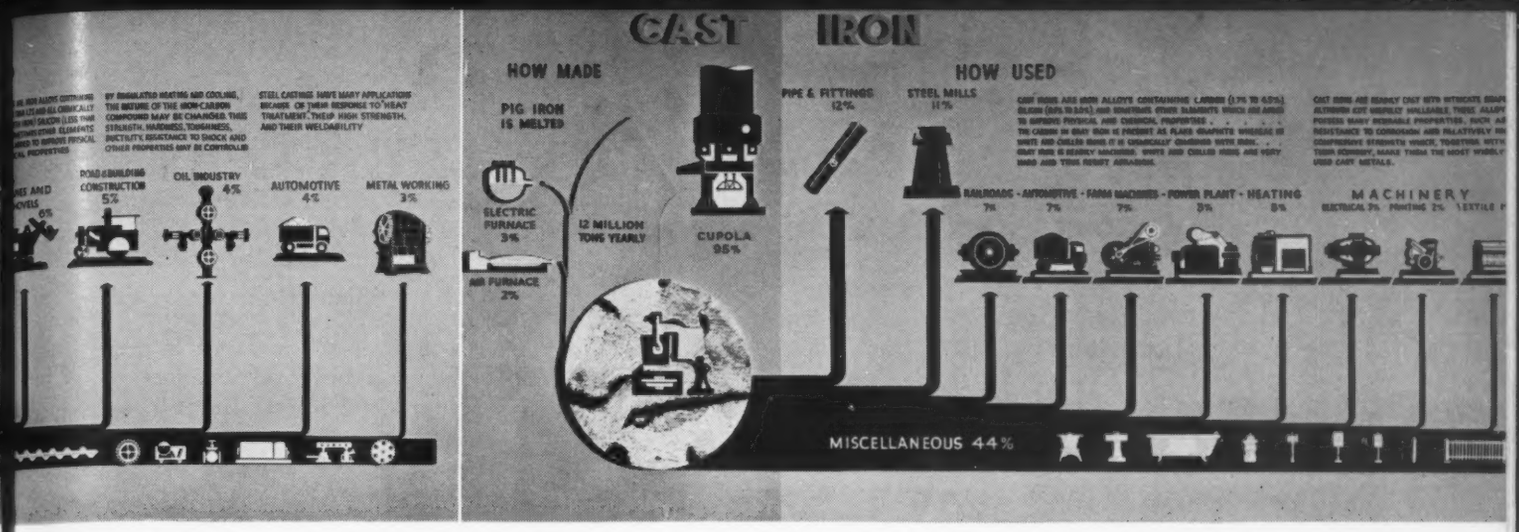
The molding layout includes a sand preparation unit and system for distributing the prepared sand to hoppers over the molding machines. A sand testing unit is used to test and demonstrate the properties of the molding sand.

It may be interesting to know that the equipment and machines used in this model foundry are not the permanent possession of the Museum, but are installed on a loan basis. This is done so that, as new and improved equipment is available to foundries, such equipment can be installed in the exhibit to keep it as up-to-date as possible.

Modern equipment and methods are not the only boast of this model shop. It is enclosed in glass and is air conditioned. At all points where dust may be evolved, such as at the pouring stations, shake-out, and sand preparation unit, hoods are provided and dust and fumes are exhausted to a dust arrester.

Why This Model Foundry?

The question now arises, "What is the purpose of this model foundry?" It is an investment for the future. Due to the fact that the foundry industry is made up of so many small units distributed over a large territory, very few of which can afford public education programs, little along that line has been done in the past. Secondly,



Application of Malleable Iron, Cast Steel and Cast Iron.

the products of the foundry industry, in the main, are not sold as such to the general public but become part of an assembled unit where their identity as castings becomes lost. For those reasons and others, the public as a whole has either a misconceived idea of what a foundry is or does, or no knowledge at all of the contributions the industry makes to our modern civilization.

This model foundry, therefore, serves both as an educational exhibition and as an effort on behalf of the industry to improve its relations with the public. In its place in the Museum, the casting of metals will be viewed annually by hundreds of students in schools and universities from all over the country as well as by thousands of interested and inquisitive adults. These people will be thrilled by the spectacular demonstration and, therefore, become more interested in the industry.

Above all, it will mean publicity of the highest type for the foundry industry. The industry should feel deeply indebted to those organizations and individuals who, through their contributions of time, effort, equipment and materials, have made possible this opportunity for publicizing the foundry industry and its products to the general public.

Merchandising Jobbing Castings

(Concluded from Page 7)

type of castings. If we have an inquiry for a type of casting that does not fit to advantage into our production methods, we frankly say so and refer the inquiry to a foundry that can handle that type of work to best advantage.

The Future

What is the outlook for the foundry industry? If such a question refers to the expected volume of sales during the next year or so, there is not much I can say. The jobbing foundry does not lead in developing new types of machines and products. It follows. In one of our plants, we have a rather limited number of accounts with larger concerns, that include automotive, textile, machine tool, building, public utility, oil refining work, etc. This shows a cross section of industry and a graph of our monthly sales is almost a duplicate, most of the time, of a graph of general business volume. A combined forecast from all of our customers would be the forecast for our business.

If the question referred to the outlook for the foundry industry as an industry, I would hesitate to start a reply because I have talked too long already. Our grand old industry that has maintained its position for centuries has never seen a period when it has made greater forward strides than it is making right now. The years since 1930 have been years of tremendous developments in casting properties, in new fields of application, in soundness and surface qualities, in mechanical production methods.

If, in 1930, one had said that castings would replace forgings for such items as camshafts and crankshafts in automotive and diesel engines, he would have been called an impractical dreamer. Yet today these developments are accomplished engineering facts along with many more equally striking developments. The cooperative effort of several thousands of the industry's members to experiment, to explore and to build up assures the position it will hold in the future.

New Members

(Concluded from Page 8)

Outside of Chapters

E. W. Clair, Salesman, Eastern Clay Products Co., Eifort, Ohio.

C. H. Cline, Plant Superintendent, The Duraloy Co., Scottdale, Pa.

Draper Corp., Inc., Hopedale, Mass. (F. M. Fitzgerald.)*

Harper's Foundry & Machine Co., Jackson, Miss. (R. W. Harper, Jr., Owner.)*

Ben. A. Kornhauser, Assoc. Metallurgist, Produc. Div., Charleston Navy Yard, Charleston, S. C.

Christian Mathiesen, Albany, N. Y., Technical Director, Whitehead Bros. Co., New York, N. Y.

B. J. Peters, Superintendent, Service Foundry, Inc., New Orleans, La.

R. J. Rice, Foundry Engineer, Metal Goods Corp., Houston, Texas.

Risering and Feeding Castings to be Discussed in Exchange Paper

A. E. CARTWRIGHT and C. C. Brisbois, Robert Mitchell Co., Ltd., Montreal, have been chosen to prepare the A.F.A official exchange paper to be presented before the 1940 meeting of the Institute of British Foundrymen. This exchange paper will discuss newer developments in methods of feeding heavy castings and will be along the lines of the paper* presented by Messrs. Cartwright and Brisbois before the 1938 A.F.A. Convention in Cleveland, a paper which attracted a great deal of attention because of the feeding methods described.

The authors of this exchange paper will be pleased to have information from members as to newer applications of direct pouring which have been developed, together with photographs of these applications which could be incorporated in their paper for the I.B.F. meeting.

*"*Risers and Gates for Some Special Non-Ferrous and Alloyed and High Test Iron Castings.*" TRANSACTIONS, American Foundrymen's Association, vol. 46, pp. 219-248 (1938).

Help the Safety and Hygiene Exhibit

E. O. JONES, Safety and Hygiene Director, American Foundrymen's Association, would like to have photographs for the Safety and Hygiene Exhibit for the coming Foundry and Allied Industry Show. He would like to have photographs of good housekeeping and safety devices which would be of special interest to the foundry industry. Members are requested to send all photographs to E. O. Jones, American Foundrymen's Association, 222 West Adams Street, Chicago, Ill.

Two years ago, at the 42nd Annual Convention held in Cleveland, Ohio, the safety and hygiene exhibit attracted considerable attention. Through the courtesy of Belle City Malleable Iron Co., Racine, Wis.; Campbell, Wyant & Cannon Foundry Co., Muskegon, Mich., and The Hamilton Foundry & Machine Co., Hamilton, Ohio, an appealing exhibit was presented. The booth was educational in nature, showing how plant safety, hygiene and good housekeeping were improving throughout the foundry industry, using the above companies as examples.

Great Interest Was Shown in the Safety and Hygiene Exhibit at the 1938 Cleveland Convention.

Chapter Chairman Conference Has Attendance From Coast to Coast

SIXTEEN of the eighteen chapters of the Association were represented at the chapter chairmen conference held in Chicago on Jan. 30. With the vice president of the Association, L. N. Shannon, Stockham Pipe Fittings Co., Birmingham, Ala., presiding, the conference was an historic occasion as it was the first all-day session bringing together those directing chapters to discuss chapter and Association problems and plans.

The far west chapters were represented by A. G. Zima of Los Angeles, chairman, Southern California, and S. D. Russell of San Francisco, chairman, Northern California. From farthest north came D. J. Macdonald, Toronto, chairman of the Ontario Chapter, while the east coast was represented by R. J. Allen of Harrison, N. J., vice chairman of the Metropolitan N. Y.-N. J. Chapter. In addition to L. N. Shannon, the Board of Directors was represented by President H. S. Washburn and Past Presidents Marshall Post and James L. Wick, Jr.

Chapters represented other than those previously mentioned, together with their delegates, were E. F. Hess, Northeastern Ohio; W. J. MacNeill, Wisconsin; N. A. Lesser, Quad City; I. R. Wagner, Central Indiana; H. H. Judson, Central New York; L. E. Everett, St. Louis; C. E. Westover, Chicago; J. A. Bowers, Birmingham; H. W. Dietert, Detroit; A. C. Arbogast, Michiana; W. J. Corbett, Buffalo, and G. J. Landstrom, Northern Illinois-Southern Wisconsin.

The conference in its deliberations discussed such subjects as membership, chapter financing, regional conferences, programs, lecture courses, directors' meetings, attendance and reports. Copies of the minutes of the meeting have been sent to all chapter board members for further study.

Junior Foundrymen Elect Officers

THE Junior Foundrymen of America, an organization of Smith-Hughes students in foundry practice at Crane Technical High School, Chicago, have elected new officers for the coming semester. The new officers are as follows:

President—Frank Buono.
Vice-President—Peter Gumz.
Secretary—William Friedler.
Treasurer—William Golasky.

The Junior Foundrymen of America was organized two years ago under the sponsorship of the Chicago Chapter.

REGIONAL CONFERENCES

Rutgers Regional Foundry Conference To Feature Melting and Testing

THE melting and testing of metals will be discussed from both the consumers' and producers' viewpoints at the second annual Rutgers Regional Conference to be held March 30 at New Brunswick, N. J., under the sponsorship of the Metropolitan Philadelphia and Metropolitan New York-New Jersey

Dr. Robert C. Clothier
President, Rutgers University,
Conference Banquet Speaker.

Chapters of the A.F.A. and the Department of Mechanical Engineering of Rutgers University. The conference, open to all interested, will feature four prominent speakers who were selected with the view of having as many varied opinions represented as possible. This same thought was carried out at the 1939 meeting and because of the enthusiastic reception of this idea, it was decided to follow the same theme this year. Many foundrymen attending the 1939 meeting confessed that they were not as well acquainted with what a consumer's idea of a good casting is as they should be and they felt that giving the consumer an opportunity to express his views was extremely instructive to the industry.

In 1939 over 200 foundrymen, representing practically every important plant in the seaboard area, attended the meeting and from the interest already evidenced in the 1940 gathering, it is likely that the attendance will exceed 300.

The conference will open at 9:00 A. M. Saturday with registration. Then following an address of welcome by P. H. Daggett, dean of engineering at the University, technical sessions will be held as shown in the accompanying program outline.

A high spot of the past year's conference was the informal luncheon arranged for noontime. It was served in the large, new Colonial gymnasium of the University, and the attending foundrymen could sit where they chose, renew old acquaintances and talk shop. This type of luncheon proved so popular in 1939 that it is being repeated this year.

A banquet in the evening, featuring an address by Dr. Robert C. Clothier, president of Rutgers University, will climax the conference. Dr. Clothier is widely known for his understanding studies of personnel problems. During the World War he served as member of the committee on classification of personnel in the Army, seeing duty both here and abroad and he is the co-author of the book, Personnel Management." Previous to his assuming the presidency of Rutgers, he was dean of men at the University of Pittsburgh. Dr. Clothier's views are known for their liberal yet realistic approach to present day personnel problems. His message will shed light on many of the problems faced by foundrymen today.

Conference Committee

The arrangements for the conference were made by a committee of representatives of both chapters and the University. The

Second Annual Foundry Conference
Rutgers University, Saturday, March 30, 1940
New Brunswick, New Jersey

9:00 A. M.

REGISTRATION.

Address of welcome by P. H. Daggett, Dean of Engineering, Rutgers University.

10:00 A. M.

Session of Melting Metals.

Chairman, Sam Tour, Lucius Pitkin, Inc., New York City.

Steel—by John Howe Hall, Consulting Met., Philadelphia, Pa.

Gray Iron—by Donald J. Reese, International Nickel Co., New York City.

Non-Ferrous — by Harry Gieseke, Ajax Electrothermic Corp., Philadelphia, Pa.

12:30 P. M.

LUNCHEON.

2:00 P. M.

Session on Testing and Inspection of Castings.

Chairman, Norman Mochel, Westinghouse Electric & Mfg. Co., Philadelphia, Pa.

The Producers' Viewpoint, by Max Kuniansky, Lynchburg Foundry Co., Lynchburg, Va.

The Consumers' Viewpoint, by Dr. N. E. Woldman, Eclipse Aviation Corp., Bendix, N. J.

6:00 P. M.

CONFERENCE BANQUET. *Toastmaster*, W. B. Coleman, Director, A.F.A., and Secretary-Treasurer of Metropolitan Philadelphia Chapter, A.F.A., W. B. Coleman Co., Philadelphia. Address by Dr. Robert C. Clothier, President of Rutgers University.

N. L. Mochel

D. J. Reese

M. Kuniansky

Sam Tour

Dr. N. E. Woldman

John H. Hall

personnel of the committee, with Fred G. Sefing as general chairman, is as follows:

Representing Metropolitan New York-New Jersey Chapter:

F. G. Sefing, International Nickel Co., New York City.

W. A. Phair, *The Iron Age*, New York City.

T. D. Parker, Climax Molybdenum Co., New York City.

R. E. Nesbitt, Pratt Institute, Brooklyn.

Representing Metropolitan Philadelphia Chapter:

W. B. Coleman, W. B. Coleman Co., Philadelphia, Pa.

W. C. Hartmann, Bethlehem Steel Co., Bethlehem, Pa.

H. L. Henszey, Carborundum Co., Philadelphia, Pa.

R. J. Keeley, Ajax Metal Co., Philadelphia, Pa.

Representing Rutgers University:

Prof. W. C. Schulte, Department of Mechanical Engineering.

Fourth New England Regional Foundry Conference Program March 29 and 30, 1940

FRIDAY, MARCH 29.

9:00 A. M.

REGISTRATION, Main Lobby, Massachusetts Institute of Technology.

10:15 A. M.

Opening Session.

Chairman, A. S. Wright, Hunt-Spiller Mfg. Corp., South Boston, Mass.
Address of Welcome by Prof. J. M. Lessells, Massachusetts Institute of Technology, Cambridge, Mass.

10:30 A. M.

Luman S. Brown Session.*

Chairman, A. B. Root, Jr., Hunt-Spiller Mfg. Corp., South Boston, Mass. *A Small Foundry's Attempt to Stimulate Individual and Group Safety Consciousness and Health Betterment*, by P. E. Rentschler, Hamilton Foundry & Machine Co., Hamilton, O.

12:30 P. M.

LUNCHEON.

2:00 P. M.

Technical Session.**

Co-Chairman: D. Wesley Cast, President, Connecticut Non-Ferrous Foundrymen's Association.

Howard A. Phelps, Phelps Foundry Co., Ansonia, Conn.
Manganese Bronze, by S. W. Chappell, Sr., Electric Boat Co., Groton, Conn.

3:30 P. M.

Technical Session.
Chairman, Henry Jensen, General Electric Co., Lynn, Mass.
Practical Cupola Practice, by Horace A. Deane, American Brake Shoe & Foundry Co., Mahwah, N. J.

6:00 P. M.

Conference Dinner.

Charles O. Butler, presiding.

Speakers: Edward L. Moreland, Dean of Engrg., Massachusetts Institute of Technology.

Henry S. Washburn, President, American Foundrymen's Association.

SATURDAY, MARCH 30

10:00 A. M.

Technical Session.

Chairman, R. F. Harrington, Hunt-Spiller Mfg. Corp., South Boston, Massachusetts.

Proper Preparation and Testing of Rebonded Sands, by N. J. Dunbeck, Eastern Clay Products, Inc., Eifort, Ohio.

12:10 P. M.

LUNCHEON.

Coffee Talk by L. P. Robinson, Werner G. Smith Co., Cleveland, Ohio.

2:00 P. M.

Technical Session.

Chairman, D. Frank O'Connor, Walworth Co., South Boston, Mass.

Shrinkage in Non-Ferrous Castings, by David Tamor, Reading Pratt & Cady Div., American Chain & Cable Co., Hartford, Conn.

3:30 P. M.

Technical Session.

Chairman, B. L. Gray, Washburn Shops, Worcester Polytechnic Institute.

Production Pattern Equipment—Methods and Metals Used, by Vaughan Reid, City Pattern Works, Detroit, Mich.

*This session is dedicated in memory of Luman S. Brown who for many years was president of the Springfield Facing Co.
**Sponsored by the Connecticut Non-Ferrous Foundrymen's Association.

Fourth New England Regional Conference Scheduled

THE Fourth Annual Regional Foundry Conference under the joint sponsorship of the New England Foundrymen's Association, Massachusetts Institute of Technology and the American Foundrymen's Association has been scheduled for March 29 and 30 at the Massachusetts Institute of Technology, Cambridge, Mass.

Cooperating in this meeting which is planned to bring together the engineer, metallurgist and foundryman to discuss common problems of design and manufacture of castings are: Connecticut Non-Ferrous Foundrymen's Association, Connecticut Foundrymen's Association, and local sections or chapters of American Institute of Mining and Metallurgical Engineers, American Society of Mechanical Engineers, American Society for Metals, American Welding Society.

The program for the conference shown in the accompanying box has been planned to cover subjects of fundamental interest to both the ferrous and non-ferrous foundryman, such as (1) Safety and Health, (2) Casting of Manganese Bronze, (3) Cupola Practice, (4) Rebonding Sands, (5) Shrinkage in Non-Ferrous Castings, (6) Pattern Equipment.

Registration will start at 9:00 A. M. the morning of Friday, March 29, in the main lobby of the Institute.

The conference committee has been fortunate in obtaining speakers who are outstanding in their respective fields and who are contributing much to the progress in the foundry industry. The wide selection of subjects and the exceptional qualifications of the speakers indicate the splendid work which has been done on the part of the committee under the chairmanship of Charles O. Butler, Warren Pipe Co., of Mass., Everett, Mass., and the vice chairmanship of A. S. Wright, Hunt-Spiller Mfg. Corp., South Boston, Mass. Other members of the committee are:

Edward N. Brough, Fairbanks Scale Co., St. Johnsbury, Vt.

R. F. Harrington, Hunt-Spiller Mfg. Corp., South Boston, Mass.

Profs. J. M. Lessells and P. E. Kyle, Massachusetts Institute of Technology, Cambridge, Mass.

D. L. Parker, Foundry Div., General Electric Co., Lynn, Mass.

H. A. Phelps, Phelps Foundry Co., Ansonia, Conn.

Walter M. Saunders, Jr., Consulting Metallurgist, Providence, R. I.

L. G. Tarantino, Connecticut Non-Ferrous Foundrymen's Association, Bridgeport, Conn.

The Registration and Reception Committee is composed of local representatives of supply companies and is under the chairmanship of R. H. Rehm, Whitehead Bros. Co., Providence, R. I., with T. C. Wilson, Republic Steel Corp., Boston, Mass., as treasurer.

Detroit Chapter Launches Lecture Course Meetings

AS ANNOUNCED in the February issue of *American Foundryman*, the Detroit Chapter, in cooperation with the University of Detroit, will hold a series of lectures on "Fundamentals of Foundry Practice." The lectures will be held at the University of Detroit's chemistry arena, Friday evenings at 8 P. M. They will begin March 1 and continue for six consecutive weeks, concluding April 5.

The opening meeting of the lecture course will find two outstanding figures of the foundry industry on hand to speak: Harry W. Dietert, chairman, Detroit chapter and president, Harry W. Dietert Co., Detroit, Mich., and V. A. Crosby, metallurgical engineer, Climax Molybdenum Co., Detroit, Mich. They will collaborate on the subject "Raw Materials and Their Functions in the Foundry." Mr. Dietert will restrict his talk to sands, binders, facings, refractories and other non-metallic materials. Mr. Crosby will then discuss pig iron, scrap, alloys and miscellaneous metallic materials. This lecture will allow the speakers to make a study of all raw materials entering into modern foundry practice.

The second lecture, March 8, will find Fred L. Weaver, metallurgist, Great Lakes Foundry Sand Co., Detroit, Mich., addressing the members on "Core Room Practice." All phases of operations in modern core rooms, with differentiation between problems in large production foundries of the automotive type and the smaller foundry units will be covered.

Leslie G. Korte, foundry engineer, Atlas Foundry Co., Detroit, Mich., will take over the meeting on March 15 and talk on "Molding Practice." The speaker will go into detail on this subject due to its great importance in foundry operation. Such topics as dry sand and permanent molds, their relative importance and advantages, molding problems in mass production foundries, molds for centrifugal work and a variety of other subjects will be touched upon.

One topic in which there is a considerable amount of interest always shown, and especially when given by Don Reese, metallurgist, International Nickel Co., New York, N. Y., is cupola operation. This discussion will take place March 22 and the following items are some of the important points which Mr. Reese will explain; cupola design, air pressures, charging details, temperatures and various other factors that are deemed important in cupola practice.

The "Handling of Castings" which is to be given by John E. Linabury, engineer, Saginaw

Malleable Iron Div., General Motors Corp., Saginaw, Mich., on March 29 is to be about the handling of castings after they have been poured. This will include shakeout and cleaning operations, inspection and testing and heat treatment.

The sixth and final lecture will be on Friday, April 5, and is entitled, "Management, Foremanship and Opportunities." This lecture will be given by Omer L. Allen, superintendent, Pontiac Motor Division Foundry, Pontiac, Mich. He will contrast the opportunities that the foundry industry holds for young men, technically trained and otherwise, with that of a decade ago.

Detroit Chapter and Michigan State College Sponsor Conference

ON April 12, Dean H. B. Dirks, College of Engineering, Michigan State College, East Lansing, Mich., will open the Eighth Annual Foundry Conference, sponsored jointly by the Detroit Chapter and the college. The conference will be a two-day affair and will be devoted to melting of cast metals.

With two technical sessions, a luncheon and the annual dinner scheduled for Friday, April 12, and a technical session and luncheon on Saturday, April 13, an interesting time may be expected by those who attend. Subjects covered include advancements and present practices in melting gray iron, steel, malleable and non-ferrous alloys and the effect of sand properties on the properties of castings. The tentative program for the conference is shown in the accompanying box.

The fact that this is the eighth such conference sponsored by the Detroit Chapter and Michigan State College indicates the success of past meetings. This annual meeting enjoys a wide reputation as one where the type of papers and the discussions presented assure those attending of the maximum in worthwhile information on castings properties and practices.

The joint committee extends to all readers a cordial invitation to attend this conference.

Error

On page 18, February issue, *American Foundryman*, at the bottom of the page, appear photographs of the Wisconsin Chapter Christmas Party. There is a statement below the caption to the effect that the photos were supplied through the courtesy of John Bing, Mexico Refractories Co. *This is incorrect.* Mr. Bing is associated with the A. P. Green Fire Brick Co. at its Milwaukee, Wis., office.

Tentative Program
Detroit Chapter Regional Conference
Held in Cooperation with Michigan State College

April 12-13, 1940 — **East Lansing, Michigan**

FRIDAY, APRIL 12

8:45 A. M.—Registration.

9:30 A. M.—Opening Meeting.
Address of welcome, Dean Dirks, Engineering Dept., Michigan State College.

10:00 A. M.—Technical Meeting.
Chairman, V. A. Crosby, Climax Molybdenum Co., Detroit.

(a) "Developments in Melting of Gray Iron," by Don Reese, International Nickel Co.

Chairman, E. R. Darby, Federal-Mogul Corp.

(b) "Advancements in Non-Ferrous Melting." Author to be determined.

12:30-1:45 P. M.—Luncheon.
Speaker, Lieutenant Mulbar, Michigan State Police Dept., subject, "Lie Detection."

2:00 P. M.—Technical Meeting.
Chairman, F. A. Melmoth, Detroit Steel Casting Co.

(a) "Modern Steel Melting for Castings," by C. E. Sims, Battelle Memorial Institute, Columbus, Ohio.

Chairman, James Lansing, Malleable Iron Founders' Society.

(b) "Melting Requirements for Pearlitic Malleable," by Carl Joseph, Saginaw Malleable Division, General Motors Corp.

Chairman, R. G. McElwee, Vanadium Corp. of America, Detroit.

(c) "The Melting of High Test Irons." Author to be determined.

7:00 P. M.—Banquet.

Toastmaster, W. Otto, Lansing Chamber of Commerce. *Speaker*, L. D. Barnhart, "Radio Personalities" Speech Dept., Michigan State College.

SATURDAY, APRIL 13

9:00 A. M.—Technical Meeting.

Chairman, Wayne Cockrell, Assistant Professor, Michigan State College.

(a) "Factors Affecting Shrinkage in Foundry Metals," by H. L. Womochel and C. C. Sigerfoos, Metallurgical Department, Michigan State College.

Chairman (b) and (c), Vaughn Reid, Detroit.

(b) "The Mechanical Properties of Castings as Affected by Mold Material," by Harry Dietert, Harry W. Dietert Co., Detroit.

(c) "The Effect of Mold Materials on the Physical Properties of Cast Aluminum," by H. Gould, Aluminum Corporation of America.

1:00-2:00 P. M.—Luncheon.

CHAPTER ACTIVITIES

New York-New Jersey Chapter Holds Equipment Night

By K. A. DeLonge*, Bayonne, N. J.

RUNNING the gamut of foundry processes from cupola operation to dust control, a group of eight experienced foundry equipment suppliers described their various products and told some 85 guests and members attending the February 5 "Equipment Night" meeting of the Metropolitan New York-New Jersey Chapter of the A. F. A. at the Essex House, Newark, N. J., of all the latest refinements and developments in foundry operation. The important part which the equipment makers have played in the growth and progress of the foundry industry was emphasized by comparison of present-day methods with those used only a few years ago.

Introduced by Technical Chairman J. W. Reid, Robins Conveying Belt Co., Passaic, N. J., A. W. Gregg, foundry engineer, Whiting Corp., Harvey, Ill., "lead-off man" for the suppliers, described equipment for washing cupola stack gases to eliminate dust and sparks. Mr. Gregg pointed out that 95 percent of all solid matter is removed from the gases, an amount which may reach a total as high as one ton per day in a foundry melting at the rate of 200 tons of iron every 24 hours.

Comments regarding sand conveying and preparation were given by R. J. Heisserman, Link Belt Co., Chicago, Ill., in his description of the sand handling and drying equipment in a modern iron and steel foundry. Passing then to molding, Thomas Kaveny, president, Herman Pneumatic Machine Co., Pittsburgh, Pa., briefly outlined the plans under way for a $2,000,000 foundry which is to house the world's largest roll-over machine —a machine weighing 34,000 lbs., capable of handling molds up to 20 tons. The latest improvements in core oven design were offered by Jasper Willsea, Willsea Works, Rochester, N. Y., who stressed the value of positive convection air circulation and adequate oven insulation.

That ever-important phase of foundry operation, materials control, was covered by Harry W. Dietert, Harry W. Dietert Co., Detroit, Mich., who described instruments for testing sand and measuring metal temperatures as well as equipment for quick carbon and sulfur determinations and spectrographic analysis. The cycle was completed by short talks on grinding and cleaning with Joseph A. Lange, Manhattan Rubber Mfg. Div., Raybestos-Manhattan Co.,

Personalities at the January 2 Meeting of the Metropolitan New York-New Jersey Chapter Meeting. Top—Left to Right—S. Frankel, H. Kramer & Co., New York, Chapter Treasurer; Harry Lamker, Wright Aeronautical Corp., Paterson, N. J., Technical Chairman of the Meeting; W. E. Day, Jr., Mack Mfg. Co., New Brunswick, N. J., Chapter Chairman; Sam Tour, Lucius Pitkin, Inc., New York, Chapter Director and Speaker at the Meeting; W. A. Phair, The Iron Age, New York, Chapter Secretary. Center—Left to Right—Some of the Chapter Officers—Sam Tour, Director; W. A. Phair, Secretary; S. Frankel, Treasurer; W. E. Day, Jr., Chairman. Bottom—Left to Right—F. L. Middleton, Ajax Metal Co., Philadelphia; L. Fisher, Fisher Casting Co., Plainfield, N. J.; W. J. Coane, Ajax Metal Co., Philadelphia; K. V. Wheeler, American Steel Casting Co., Newark, N. J.; J. W. Reid, Robins Conveying Belt Co., Passaic, N. J.; Mr. Kindquist, International Nickel Co., New York; R. E. Nesbitt, Pratt Institute, Brooklyn, N. Y.; A. Gobus, Lucius Pitken, Inc., New York.

(Photos, Courtesy W. B. Coleman, W. B. Coleman & Co., Philadelphia)

*Technical Secretary, Metropolitan New York-New Jersey Chapter and International Nickel Co.

(Photo, Courtesy, W. B. Coleman, W. B. Coleman & Co., Philadelphia.)

Some of Those Attending the January 2 Meeting of the Metropolitan New York-New Jersey Chapter. Left to Right—G. W. Wallace, Debevoise-Anderson Co.; the man with the glasses just to the right of Mr. Wallace is G. H. Lambker, Sterling Wheelbarrow Co.; Wm. Haas, Nathan Mfg. Co., New York; Mr. Spalding, Nathan Mfg. Co., New York; W. R. Toeplitz, Bound Brook Oilless Bearing Co., Bound Brook, N. J.; Mr. Woldman, Eclipse Aviation Corp., E. Orange, N. J.; F. Foxhall, Eclipse Aviation Corp., E. Orange, N. J.; S. Danziger, H. Kramer & Co., New York.

Passaic, N. J., commenting on the former item and pointing out the trend to higher speed grinding wheels. The advances made in recent years in the cleaning of castings were outlined by James Rigby, American Foundry Equipment Company, Mishawaka, Ind., while modern methods of eliminaitng the dust problem attending the abrasive blast cleaning process were described by W. D. Vedder, Pangborn Corp., Hagerstown, Md.

Castings Discussed at Joint Meeting in Detroit

By O. E. Goudy,* Detroit, Mich.

A JOINT meeting of the Detroit A.F.A. and A.S.M. Chapters was held at the Fort Shelby Hotel, Jan. 8, 1940, with a record attendance of about 450.

Following the dinner, Chairman Beckwith introduced William P. Woodside, Climax Molybdenum Co., who gave a short talk, preceding the talking movie, "Panorama of Alloys in Steel," sponsored by his company. This movie, covering the early days in the heat treatment of steel, when it was done by the blacksmiths, was very much enjoyed.

For the technical meeting which followed, F. J. Walls, International Nickel Co., Detroit, introduced C. Jeter, metallurgist, Ford Motor Co., Detroit, who had "Cast Steels in Automotive Work" for his subject, but confined his talk principally to castings as used in the new Ford tractor. The tractor, which weighs about 2,100 pounds, contains over 50 per cent of its weight in castings.

Mr. Jeter, by means of illustrative slides, showed the many methods by which several of the castings are made. Particular interest was shown in their method of centrifugally casting ring and transmission gears. This is done on a revolving table, at floor level, with about 18 heads, or mold tables. At a fixed point, the mold starts to revolve in a horizontal position, and reaches the desired speed just before the pouring station. Sufficient time is allowed to solidify, and then the castings are removed, and the mold is prepared for the next cycle. There is very little return scrap by this method.

Generally, steel castings are poured in batches, and, at this time, Mr. Jeter, also, showed how many of the molds are handled or poured continuously. That is, the molds, by means of a conveyor, are brought to one point, where a continuous supply of metal exists in a holding furnace. Various types of pourings are used, depending upon the particular mold. In some cases, it is all automatic, while in others, the molds might be poured by the shuttle car method. Crankshafts are made in an all dry sand mold, with four castings to each mold.

About eight different types of steel are used for the various castings, and each type, along with its analysis and physical properties, was discussed thoroughly. In conclusion, after answering many questions, the speaker invited all to make an examination of several of the castings which he had on display.

*Kelsey-Hayes Wheel Co., and Chapter Reporter.

Northern Illinois-Southern Wisconsin Chapter Argues Melting Practices

THE regular monthly meeting of the Northern Illinois-Southern Wisconsin Chapter held the evening of Feb. 13 was devoted to a round table meeting on melting iron, with P. A. Paulson, vice chairman of the chapter, presiding. Some 60 members attended this meeting which was held at the Hotel Faust, Rockford. The first speaker was John Clausen, Greenlee Bros. Co., Rockford, who presented a very interesting discussion of cupola practice at his plant, citing special methods used in the production of machinery castings.

The second speaker, George K. Minert, Gunite Foundries Corp., Rockford, reviewed in detail the construction and operation of the air furnace for the production of white iron for malleable castings. The third speaker, H. C. Winte, Fairbanks Morse & Co., Beloit, Wis., gave a detailed explanation of the use of the electric furnace for melting cast iron, citing cost figures, chemical analyses and operating details. The series of papers proved extremely interesting and the discussion brought out many points of very direct practical interest.

Northeastern Ohio Has Double Feature

By Pat Dwyer,* Cleveland, Ohio

FOLLOWING the usual monthly dinner Feb. 8 at the Tudor Arms, Cleveland, over 125 members and guests of the Northeastern Ohio Chapter A.F. A., saw and heard a double feature program dealing with the manufacture of chilled car wheels, and with copper in cast iron. The first feature, a moving picture with vocal accompaniment, was presented through the courtesy of the Association of Manufacturers of Chilled Car Wheels. For the second feature, a paper on copper in cast iron was presented by Tom Barlow, Copper, Iron and Steel Development Association, Cleveland.

Ed. Follman, member of the chapter and superintendent of the Cleveland Production Co., local unit of the Griffin Wheel Co., presented an interesting introduction to the subject before the car wheel picture was projected on the screen. Standards of acceptance on chilled car wheels probably are higher, tests are more severe and tolerances are narrower than on any other class of castings. Chemical analysis and physical properties are held to exceedingly close limitations. In addition to presenting a clean, smooth surface, the wheel tread must be a true circle and must not show a variation over ¼ inch when taped for circumferential measurement. The only machine work on a wheel is a light cut in the bore, two thousandths of an inch less than the diameter of the axle end on to which it is forced by hydraulic pressure. The picture with running vocal comment showed details of equipment and operation at the mechanized plant of the Griffin Wheel Co., Chicago.

According to Mr. Barlow the use of copper in cast iron is primarily either to obtain certain definite physical or engineering properties or to permit essential economies to the foundryman by decreasing scrap losses, machining costs and foundry costs. To accomplish this result, copper must be used judiciously, taking into account its many sided functions and considering that copper in common with other alloying elements is not in any way a cure all. Extended reference was made to the use of copper in connection with the use of other alloys and to typical examples of castings made from alloy irons. Copper may be added to cast iron in many ways. The best way usually is determined by local conditions.

*Engineering Editor, The Foundry.

Central New York Holds Group Meetings on Non-Ferrous and Ferrous Metals

By L. D. Wright,* Geneva, N. Y.

AN INNOVATION for the Central New York Chapter was brought about at the regular monthly meeting Feb. 9 when, following the chapter dinner at which some 90 members were present, the group was divided into two sections, one to hear George Evans, Mathieson Alkali Works, New York City, discuss cupola practice, the other to hear H. J. Rowe, Aluminum Co. of America, Cleveland, O., describe recent developments in the casting of aluminum alloys.

Mr. Evans took as his subject, "Equipment Necessary to Produce and Handle the Metal Required for Foundries of Varying Tonnages." He described the four methods normally used to charge a cupola. Each method was discussed with relation to the total melt and figures were presented to show the most economical method for foundries of different capacities. Every phase of cupola construction was described.

A general discussion was entered into by all of the members relative to the height of the tuyeres from the sand bottom and also the distance the slag hole should be below the tuyeres. Mr. Evans related several reasons why different tuyere heights were used with different metal compositions. There is not a subject that can be presented before a group of foundrymen that will bring forth more questions from the floor than the subject of cupola and this meeting was no exception.

Max Ganzauge, Goulds Pumps, Inc., Senaca Falls, N. Y., acted as program chairman of the nonferrous group, with 39 members present. Mr. Rowe referred to the steady increase in the production of aluminum alloy castings which carried with it an increase in the size of castings made. It is not unusual now to make:

Sand Castings, Weighing 7,000 lbs.

Permanent Mold Castings, Weighing, 20-50 lbs.

Semi-Permanent Mold Castings, Weighing 500 lbs.

Die Castings, 12-20 lbs.

Mr. Rowe stated that a number of recent developments took place in the aluminum industry. They are: (1) An improvement in melting practice. A definite trend to limit the speed of melting in order to reduce the amount of oxide inclusions; (2) Pin hole porosity is getting more and more under control. Causes of porosity are known. Humidity in the air is its major cause. A maximum 5 gr/cu. ft. is permissible. Air conditioning of foundries will be the final solution; (3) Improvement in heat treatment, giving the metal improved characteristics; (4) Welding, as a means of fabricating structures; (5) Developments in furnace brazing, though still in its infancy; (6) The development of a great variety of corrosion resistant finishes, also electroplated finishes of copper, chromium, etc.

The climax of the evening was the presentation of a two-reel sound film on the production of aluminum from ore to finished product.

*United States Radiator Company and Secretary, Central New York Chapter.

Allan Discusses Health Hazards at St. Louis

By J. W. Kelin,* St. Louis, Mo.

THE St. Louis District Chapter held one of its most important meetings the evening of Feb. 8 when James R. Allan, a past director of the A.F.A. and assistant manager, industrial engineering and construction division, International Harvester Co., Chicago, gave an address on "Occupational Disease Hazards." Mr. Allan, who is chairman of the A.F.A. Industrial Hygiene Codes Committee, covered many features of very definite interest to the large group present and keen interest was displayed during the talk and in the question and answer period which followed.

Following the chapter dinner held at Hotel York, a young boy scout, Raymond Newsham, gave a brief description of the work of the scouts, directing attention to the present scout campaign to increase membership. An announcement was made that T. C. Hamlin, Webb Kammerer, Joe Walsch, C. B. Shanley, Roy Jacobsen, J. W. Kelin and L. E. Everett were appointed as a committee to submit nominees for chapter officers during the 1940-41 year.

An important announcement made was that the chapter was to sponsor its third annual extension meeting at Kansas City, March 9. This meeting will be held at the Hotel Continental, with the speakers being announced later.

St. Louis District Chapter to Hold Kansas City Meeting

L. H. RUDESILL, metallurgist, Griffin Wheel Co., Chicago, will be the speaker at the Third Annual Kansas City Extension meeting sponsored by the St. Louis District Chapter of the American Foundrymen's Association. This meeting will be held in the Continental Hotel, Kansas City, Mo., March 29. Mr. Rudesill's subject will be "Hot Blast Cupola Melting." A. O. Nilles, Griffin Wheel Co., Kansas City, Mo., is acting as chairman of the meeting.

As indicated by the title of the meeting, this is the third such meeting sponsored by the St. Louis District Chapter. During the past three years the St. Louis District Chapter has established close cooperation with the foundrymen of the Kansas City district, which has worked to mutual benefit of both groups. Many St. Louis foundrymen are expected to attend the meeting on March 29.

*Federated Metals Div., American Smelting & Refining Co. and Secretary-Treasurer, St. Louis Chapter.

Castings Inspection Interests Chicago Chapter

THE February meeting of the Chicago Chapter was held at the Chicago Towers Club, with C. E. Westover, chapter chairman, Burnside Steel Foundry Co., presiding.

M. P. Johnson, chief inspector, Caterpillar Tractor Co., Peoria, Ill., was the principal speaker and gave an interesting and instructive talk illustrated with slides. Machine shop control of inspection of castings was the theme of his paper. His talk was based on his experience in the Caterpillar Tractor Co. and all facts and figures were taken from that source. The speaker went into detail about the inspection of castings for various and numerous types of defects found in castings, such as cracks, shrinkage and porosity. He dealt with a variety of ways and means of testing pieces for flaws and faults, but told his audience that even in these modern times, the old method of kerosene and flour was still used in his plant for detecting cracks. He said it was a very old method but still very reliable.

Inspectors for the three plants in Peoria, namely, the foundry, the tractor plant the road machinery plant, were changed intermittently in order that they may come into closer contact with all types of castings. Inspection trips by inspectors to these various plants also are carried out on a large scale, as the trips tend to give the inspectors a broader knowledge of the foundry's work.

In conclusion, the speaker told of the eight-week inspection course that was conducted for all employees of the three plants to familiarize them with the type of work being done by the inspection department and what its purpose was. Mr. Johnson told how each inspector always thought of each casting he inspected as having some effect on one or more individuals and, if allowed to go through when almost right, might cause serious injury to those using it. This has caused his plant to adopt the slogan "Almost right is wrong."

At the beginning of the meeting Chairman Westover announced that a distinguished visitor was present and introduced M. J. Gregory, factory manager, Caterpillar Tractor Co., past chairman of the Quad City Chapter and now director of that chapter. Mr. Gregory has also presented talks before the Chicago Chapter.

"Foundry" Winners Attend Chicago Lecture Course

JANUARY 15 the Chicago Chapter started its fifth annual series of lecture course meetings. The 1940 lecture course extends from January 15 to April 22 and covers basic subjects of general foundry practice. It is offered primarily for operating foundrymen, apprentices and students who desire to broaden their knowledge of foundry problems, techniques and operations. These talks are given by men who know the foundry "game" and are outstanding in their respective fields. Opportunity for informal discussion follows each

lecture whereby points that are brought up during the talk can be questioned and discussed.

This year the lectures have been divided into two classes, the iron and steel, each having six meetings. The meetings are held every Monday evening in the Peoples' Gas Auditrouim, 122 Michigan Ave., Chicago. Attendance has been the best since the Chicago Chapter inaugurated its series of lectures. The average attendance for the first four lectures has been about 300. A great deal of interest has been shown and Max Becker, Whiting Corp., Harvey, Ill., secretary of the lecture course, H. K. Briggs, Chicago, chairman of the iron group and his committee, and B. J. Aamodt, National Malleable & Steel Castings Co., chairman of the steel group, and his committee deserve worthy praise for their work.

Every year it has been the policy of the Chicago Chapter to have door prizes awarded at the beginning of each meeting. This year through the courtesy of the Penton Publishing Co., Cleveland, Ohio, the chapter is awarding a one year's subscription to "The Foundry" magazine at each of the twelve meetings. The lucky number holders for the first four meetings are as follows: Frank Kucera, International Harvester Co.; C. W. Schmidt, Chicago Malleable & Steel Castings Co.; Emil Butwell, Link Belt Co., and John Duffy, H. Kramer & Co.

Michiana Chapter Meets With A.S.M.

By V. S. Spears,* Mishawaka, Ind.

THE February 14 meeting of the Michiana Chapter was held jointly with the Notre Dame Chapter of the American Society for Metals at the University of Notre Dame with Prof. E. G. Mahin, department of metallurgy, University of Notre Dame, presiding. The speaker was Jerome Strauss, Vanadium Corp. of America, Bridgeville, Pa., who addressed the meeting on "Metallurgical Applications of Vanadium." In his talk, Mr. Strauss discussed the properties imparted by vanadium to steel and cast iron and pointed out the special applications and commercial uses of steel resulting. The speaker directed his remarks mainly to steel, but touched briefly upon the use of vanadium in cast iron with special reference to its effect on grain structure. During his talk, Mr. Strauss showed slides comparing surface and internal grain structures, Charpy impact tests, hardness and temperatures for heating and quenching of both carbon and vanadium steels.

*American Foundry Equipment Co.

The Foundry and National Defense Discussed at Wisconsin Meeting

ON JANUARY 19, 1940, Col. Norman F. Ramsey, Ordnance Department, Commanding Officer, Rock Island Arsenal, Rock Island, Ill., presented to the Wisconsin Chapter a talk on "The Foundry and National Defense." The meeting was held in Hotel Schroeder, Milwaukee, with B. D. Claffey, General Malleable Corp., Waukesha, Chapter Vice Chairman, presiding.

(Photo, Courtesy John Bing, Milwaukee Representative, A. P. Green Fire Brick Co.)

Left to Right—W. J. MacNeill, Federal Malleable Co., Milwaukee, Chairman of the Wisconsin Chapter; Col. N. F. Ramsey, Commanding Officer, Rock Island Arsenal, Rock Island, Ill., Speaker at the January Meeting of the Chapter, and G. K. Dreher, Ampco Metal, Inc., Milwaukee.

Col. Ramsey's subject was narrowed down somewhat to "The Foundry and National Defense so far as Army Ordnance Is Concerned." Col. Ramsey gave an historical presentation which showed the importance of the foundry to national defense in the past for casting of guns and projectiles. With the improvements in the manufacture of cast iron smooth bore guns, and the introduction of General Rodman's method of casting by cooling from the interior, greatly improved weapons of that type were developed. Large quantities of field, siege, seacoast guns and projectiles for smooth bore guns were produced by foundries during the Civil War. The part the foundry played in the development of steel guns was also brought out.

The difficulties of foundries in meeting many requirements of national defense during the World War were discussed at some length and lantern slides were shown depicting various types of mobile artillery and the dependence of this type of weapon on the foundry for certain steel, bronze and aluminum castings. Very little cast iron is used in the manufacture of these weapons, due to the fact that the material must withstand severe shocks.

In discussing the future of the foundry in national defense attention was invited to the great advance in ordnance which has been made in recent years and the difficulties industry would

have if called upon to manufacture so many new pieces of complicated ordnance on a real production basis.

Developments which have been made in the production of armor plate castings and in the production of centrifugal castings for cannon were mentioned as possible developments for the foundry in a future emergency.

The importance of training apprentices to make available a supply of skilled labor was discussed and the experience of Rock Island Arsenal in the training of apprentice machinists was covered in full.

In conclusion, Col. Ramsey gave practical suggestions to the foundrymen present as to the procedure to meet the demands of national defense by providing additional facilities and thus avoiding some of the mistakes of the World War.

The relationship between the foundrymen of Wisconsin and the Chicago District Ordnance Office was brought out and they were advised how they should proceed to qualify for supplying material from the foundry for the national defense of this country. The importance of the foundry industry to national defense was stressed throughout.

Sand is Subject at Philadelphia Meeting

By T. J. Fegley*, Philadelphia, Pa.

THE Metropolitan Philadelphia Chapter had another good attendance at its meeting on February 9 at the Engineers Club. One hundred and twenty-five members and friends sat down to dinner and listened to an eloquent patriotic address by Judge Eugene V. Alessandroni of the Court of Common Pleas. Judge Alessandroni, speaking on "God Bless America," told how, as an immigrant boy from Italy coming to this country at the age of four, he had, by taking advantage of free education and hard work, risen to be a judge at the age of 40. It still can be done in America today.

Our technical speaker was Harry W. Dietert, well known to foundrymen as president, Harry W. Dietert Co., Detroit, Mich. He was introduced by our Chapter Chairman, Wm. C. Hartmann, Bethlehem Steel Co., Bethlehem, Pa., and spoke on the "Effect of Molding Sand on the Physical and Mechanical Properties of Castings." He used lantern slides to illustrate his talk and stated that the moisture content of molding sand had a great influence on the physical and mechanical properties of cast metal.

Moisture materially increases the chill as measured by a step chill test pattern. The fluidity of a metal is reduced as the moisture content of the sand increases. An increase of moisture also reduces the deflection or ductility of a metal with a marked influence on the strength of a metal.

The rate of heat transfer in a mold increases with an increase of permeability. With an increase of permeability, the chill depth increases and porosity is reduced. On thin castings, a high permeability will sufficiently cool the metal to reduce fluidity.

The grain size of a metal is reduced with an increase of permeability, with a corresponding reduction of graphite particle size. The strength and ductility of a casting may be effected by variation in permeability.

Illustrations were also shown of metal feeding more in dried molds than in green sand molds. Also how high mold permeability may act as a chill to reduce porosity.

The discussion was closed with a series of slides reviewing hot strength, fineness and deformation of molding sands.

*North Bros. Mfg. Co., and Chairman, Publicity Committee, Metropolitan Philadelphia Chapter.

Cincinnati Chapter Hears About Castings Progress

By E. T. Korten,* Cincinnati, Ohio

A HARDY group of foundrymen assembled at the Gateway Restaurant, Union Terminal, Cincinnati, in spite of a heavy snow and threatening blizzard. Only 55 assembled for dinner and 17 other members arrived in time for the 8 o'clock meeting, but the officers and our guest speaker were more than pleased with this attendance. A delicious roast beef dinner was served and was heartily enjoyed by all.

Our program committee, in a very novel way, presented William Beiser, well known to all of us, who presented our coffee talk. His remarks provided ample food for thought.

Our chairman, H. K. Ewig, Cincinnati Milling Machine Co., addressed the group assembled, reporting future plans of our organization. The names of five new members were read but only two happened to be present and were introduced to all. Our new director, William Heilig, William Powell Co., also was introduced.

The meeting then was turned over to our guest speaker, Dr. C. H. Lorig, Battelle Memorial Institute, Columbus, Ohio, who spoke on the "Research and Development in Cast Metals." As Dr. Lorig's paper covered all ferrous and non-ferrous castings, all present were very much interested in the contents, and a very interesting question and answer period followed.

Chairman Ewig then thanked Dr. Lorig in behalf of our membership for a most enjoyable evening and reminded all present that our next meeting would be devoted to the subject of "safety" and our speaker would be P. E. Rentschler, The Hamilton Foundry and Machine Co., Hamilton, Ohio, who is well qualified to address us on this topic.

*Reliable Pattern & Castings Co. and Secretary, Cincinnati District Chapter.

Ontario Chapter Gets Tips on Accident Prevention

By G. L. White*, Toronto, Ont.

THE Ontario Chapter started off 1940 with a well attended meeting on Jan. 26 at the Carls-Rite Hotel, Toronto, under the chairmanship of D. J. Macdonald, Dominion Radiator and Boiler Co., Ltd., Toronto, Ont.

Speakers found their task an easy one, using the chapter's newly purchased loud speaking system. Special entertainment was provided and an outstanding feature of the gathering was the movie, partly in color, of the chapter picnic held last September at Barnesdale, the estate of W. R. Barnes, W. R. Barnes Co., Ltd., Hamilton, Ont.

The coffee talk, given by R. B. Morley, manager of Industrial Accident Prevention Association, Toronto, Ont., served in part as an introduction to the subject of "House Cleaning and the Prevention of Accidents in the Foundry Industry" which was discussed in the main address by H. Mabson, chief inspector of the Association.

Mr. Morley stated that management cannot shirk responsibility for safety in the plant, and divided accident prevention into a number of important sections including adequate protection of machinery and processes; effective supervision of work; adequate first aid; thorough investigation of all accidents; safety education; control of dust and fumes; and the maintenance of the general health of workers.

In introducing his subject, Mr. Mabson presented some statistics based upon an analysis of the accident experience and assessments under the Workmen's Compensation Board of Class 08, the foundry industry, in Ontario. In the period 1926 to 1937, the group effected a considerable reduction in medical aid claims, temporary disabilities, and permanent disabilities, but suffered an increase in the deaths reported.

In the general accident section, burns have been materially reduced in number and seriousness by the replacement of cotton shirts with woolen ones, and the enforcement of the use of proper molders' boots and leggings. Eye injuries were cut down by better mechanical guarding of grinding wheels and the provision of suitable goggles. The large number of injuries from handling materials has been decreased by the use of proper hand leathers or gloves, careful checking of materials-handling equipment, such as cranes; education of workers in the right methods of using the equipment; and better systems for the storage of flasks. Around the cupola, greater safety is achieved by the use of screen guards above the workmen engaged in repairs, and the instruction of workers in safe methods of operation. Accidents with ladles may be reduced by protection of ladle gearing from splashes of hot metal which might render it useless, and by careful inspection of this equipment for mechanical defects, dampness in lining, etc. Proper installation and grounding of electrical equipment is a point to be watched.

Silicosis may be combatted by enclosing dusty operations and providing adequate exhaust systems for them; by isolating such operations as grinding, snagging and shakeout; by use of non-silicious materials; by ventilation at the source and general ventilation; and finally where other forms of protection cannot be used, by personal protection. In addition, a general clean-up of the plant in conjunction with the enforcement of correct working and housekeeping practices will contribute much to the solution of the silicosis problem.

*Canadian Metals and Metallurgical Industries and Reporter, Ontario Chapter.

Central Indiana Chapter Hears Busch and George

By R. A. Thompson,* Indianapolis, Ind.

CENTRAL Indiana Chapter met February 12 at the Washington Hotel, Indianapolis, with I. R. Wagner, Electric Steel Castings Co., Indianapolis, chapter chairman, presiding. Following the usual dinner, those attending divided into two groups, one to hear W. B. George, foundry engineer, R. Lavin & Sons, Inc., Chicago, speak on "Melting Practices and Casting Defects in Non-Ferrous Foundries." The second group was addressed by A. J. Busch, foundry engineer, C. C. Kawin Co., Chicago, on "Scrap Castings — Causes and Remedies."

Prior to the meeting, the Nominating Committee, whose duty it is to nominate officers and directors for the coming year, was appointed. B. P. Mulcahy, Citizens Gas & Coke Utility, was announced as chairman of the committee. L. E. Davis, Republic Coal & Coke Co., Terre Haute, Ind., chairman of the Chapter Membership Committee, reported on the progress the chapter had made in regard to membership and then introduced the new members who had become affiliated with A.F.A. and the chapter since the January meeting.

*Electric Steel Castings Co. and Secretary, Central Indiana Chapter.

Detroit Chapter Learns About Cleaning

F. J. WALLS, International Nickel Co., Inc., Detroit, presided at the regular monthly meeting of the Detroit Chapter held February 15 at the Ft. Shelby Hotel. A coffee talk feature was presented by a representative of the Eastman Kodak Co., Rochester, N. Y., who gave an illustrated description of the developments of color photography.

The technical features of the

evening were two addresses on cleaning castings. F. W. Pedrotty, American Foundry Equipment Co., Mishawaka, Ind., and Ronald Webster, Hydro Blast Corp., Chicago, described some of the newer developments of dry and wet cleaning of castings, illustrating their talks with motion pictures and stereopticon slides of applications of these processes. H. P. Kimber, Ford Motor Co., acted as discussion leader for the meeting.

President Washburn Visits Northern California Chapter

By G. L. Kennard*, San Francisco, Calif.

THE Feb. 13 meeting of the Northern California Chapter was held at Lake Merritt Hotel, Oakland, Calif., with Chapter Chairman S. D. Russell, Phoenix Iron Works, Oakland, presiding. This was the chapter's first President's Night and the guests were Henry S. Washburn, president, American Foundrymen's Association, and C. E. Hoyt, executive vice-president of A.F.A.

In opening the meeting, Chairman Russell welcomed members, guests and friends and reported briefly on the Chapter Chairmen's Conference held Jan. 30, Chicago, and also explained the purpose of the first visit to the Pacific Coast of the president and executive vice-president of A.F.A. He then introduced Mr. Hoyt who outlined and explained the work of the Association in its many fields and expressed his enjoyment at the interest and activity shown by the foundrymen on the Pacific Coast. President Washburn, in his comments, reviewed his experience in the foundry business and as an active member of A. F. A. before and during his term as president. He answered many questions that were of interest to local foundrymen in their effort to conduct a profitable business. He strongly urged better acquaintance with each other and each other's problems and a willingness to cooperate for the good of the industry, always keeping in mind that the customer is the important party to be considered.

Following these brief comments, D. J. Reese, International Nickel Co., New York, spoke on "Cupola Practice." The talk was illustrated and was acclaimed by those present as the best yet presented to the chapter. Following Mr. Reese's 45-minute talk, an interesting question and answer period brought out many points that could have been discussed at much greater length had time permitted.

*Northern California Foundrymen's Institute and Secretary-Treasurer, Northern California Chapter.

Gaiety Reigns at Chicago Chapter Ladies' Night Party

ONE of the largest and best social gatherings of the Chicago Chapter was the Annual Ladies' Night Party held February 2 at the Chicago Towers Club. Some 750 members, their ladies and guests, took part in an evening of merry-making and fun. The evening was spent in dining, dancing and seeing an enjoyable floor show. The members and guests were welcomed by Chapter Chairman C. E. Westover and P. V. Martin, Carnegie-Illinois Steel Corp., Chicago, chairman, Chicago Chapter Entertainment Committee, before the fun began.

That the events moved so smoothly was due to the splendid work of the Entertainment Committee under the chairmanship of Mr. Martin with H. E. Cullen, Carnegie-Illinois Steel Co., as secretary. The remaining members of the committee are as follows: J. H. Abbott, Hickman, Williams & Co.; B. J. Aamodt, National Malleable & Steel Castings Co.; W. E. Brewster, Wisconsin Steel Co.; H. A. Forsberg, Continental Roll & Steel Foundry Co.; D. N. Gellert, Nichol Straight Foundry Co.; J. G. Gore, Werner G. Smith Co.; M. F. Becker, Whiting Corp.; H. F. Henninger, International Co.; W. C. Hutchins, Pyle-National Co.; Roy A. Lindgren, Wisconsin Steel Co.; H. B. Hoge, Western Foundry Co.; Edw. Longenbeck, American Manganese Steel Co.; T. J. Magnuson; Champion Foundry & Machine Co.; O. C. Olson, S. Obermayer Co.; H. E. Orr, Burnside Steel Foundry Co.; J. H. Owen, Harbison-Walker Refractories Co.; W. C. Packard, National Engineering Co.; W. H. Parker, American Steel Foundries, and H. J. Pfeifer, Electro Metallurgical Co.

Buffalo Discusses Patterns and Fire Prevention

By J. R. Wark,* Buffalo, N. Y.

THE regular monthly meeting of the Buffalo Chapter was held Feb. 2 at the Hotel Touraine with chapter chairman, W. J. Corbett, presiding. Some 75 members and guests gathered to hear the two speakers, Vaughan Reid, president, City Pattern Works, Detroit, and Herbert Carthays, Fire Prevention Bureau, Buffalo Fire Dept.

Mr. Reid, well known to A.F. A. members and a past chairman of the Detroit Chapter, gave an exceedingly valuable discussion on pattern work, covering construction, metals used and types of lumber. The data and information he presented proved of the greatest interest.

Mr. Carthays gave a short description of the newer features of Buffalo fire prevention and control work.

It was announced that the chapter's next meeting would be held at the Hotel Touraine on March 1 with four salesmen speaking on the respective merits of their materials.

*Queen City Sand & Supply Co. and Secretary, Buffalo Chapter.

Southern California Holds President's Night

By W. F. Haggman*, Los Angeles, Calif.

MORE than 160 Southern California foundrymen and their friends, the largest turnout of any regular meeting since the Chapter was organized, gathered at the Los Angeles Athletic Club, Los Angeles, Calif., February 15, to greet President H. S. Washburn and Executive Vice-President C. E. Hoyt of the American Foundrymen's Association, and D. J. Reese, International Nickel Co., Inc., New York, N. Y., the speaker.

Mr. Hoyt gave short address on the coming May Convention and other Chapter activities.

Mr. Washburn talked on benefits derived from A.F.A. and gave examples of better feeling among foundrymen due to A.F.A. activities.

Mr. Reese spoke on the operation of a cupola in its many phases, highlighting the relationship between cupola diameter, weights and sizes of materials entering into the charge, outlining the various functions of coke beds; pointed out the relation between coke and quality of iron produced, describing the various methods used to tap a cupola and metal handling technique, from cupola to mold.

His talk was illustrated with slides and, after the talk, he led a round table discussion, answering questions that brought out many answers to questions that confront the foundrymen of today.

W. D. Bailey Jr., Chairman of the Entertainment Committee, provided a musical and dancing program by several Spanish artists who offered numbers in the Mexican manner. The entertainment also put up a radio as a door prize and conducted a raffle that was very well received.

After the meeting the members were introduced personally to the A.F.A. officers and everyone voted the meeting one of the most successful ever held by the Southern California Chapter.

*Foundry Specialties Co., and Secretary, Southern California Chapter.

March Chapter Meeting Schedule

March 1

Buffalo
Hotel Touraine, Buffalo
Equipment Night

✦ ✦

March 4

Metropolitan New York-New Jersey
Essex House, Newark, N. J.
J. R. ALLAN, International Harvester Co.
"Dust Elimination and Foundry Codes"

✦ ✦

March 7

Detroit
Fort Shelby Hotel, Detroit
DR. JAMES T. MACKENZIE, American Cast Iron Pipe Co.
"Multiple Cupola Melting for Various Grades of Iron"
Coffee Talk—JACK LATHROP, Adv. Mgr.
"The Foundry"

✦ ✦

March 8

Metropolitan Philadelphia
Engineers Club, Philadelphia
R. G. MCELWEE, Vanadium Corp. of America
"Vanadium in Iron & Steel Castings"

✦

Central New York
Onondaga Hotel, Syracuse, N. Y.
GEORGE EVANS, Mathieson Alkali Co.
"The Cupola"
JOE NIXON, Whitehead Metal Products
"Production of Bronze and Monel Castings"

✦ ✦

March 11

Central Indiana
Washington Hotel, Indianapolis
L. P. ROBINSON, Werner G. Smith Co.
"Core Room Practices"

Chicago
Chicago Towers Bldg.
(Formerly Medinah Club)
H. W. MAXON, International Harvester Co.
"Foundry Practice and Equipment"

✦ ✦

March 12

Cincinnati District
Gateway Restaurant, Union Terminal, Cincinnati
P. E. RENTSCHLER, The Hamilton Foundry & Machine Co.
"Plant Safety"

✦

Michiana
Hotel Oliver, South Bend
JAMES THOMSON, Continental Roll & Steel Foundry Co.
"Plant Engineering and Foundry Maintenance"

✦

Northern Illinois-Southern Wisconsin
Faust Hotel, Rockford
H. W. LUNDIN, Liberty Mutual Insurance Co.
"Safety Methods in the Foundry"

✦ ✦

March 14

St. Louis District
York Hotel, St. Louis
W. HARVEY PAYNE
"Melting Ferrous Metals"

✦ ✦

March 15

Wisconsin
Schroeder Hotel, Milwaukee
Gray Iron, Steel, Malleable, Non-Ferrous Round Table Discussions

✦

Birmingham
Tutwiler Hotel, Birmingham
DR. J. T. MACKENZIE
"Chemical Changes in Cast Iron in the Cupola"

✦ ✦

March 18

Quad-City
Blackhawk Hotel, Davenport, Iowa
H. J. ROWE, Aluminum Co. of America
"Aluminum Alloy Castings"

March 29

Ontario
Carlsrite Hotel, Toronto
N. B. CLARKE, Steel Co. of Canada
"The Manufacture of Pig Iron"

✦

St. Louis District
Hotel Continental, Kansas City, Mo.
Third Annual Extension Meeting
L. H. RUDESILL, Griffin Wheel Co.
"Hot Blast Cupola Melting"

✦ ✦

March 14

Northeastern Ohio
Cleveland Club, Cleveland
M. D. JOHNSON, Caterpillar Tractor Co.
"Inspection of Gray Iron, Malleable & Steel Castings"

✦ ✦

March 8

Northern California
Central Trade School, Oakland

✦ ✦

March 21

Southern California
W. H. ROMANOFF, H. Kramer & Co., Chicago
"Brass Foundry Problems"

✦ ✦

Regional Conferences

March 29-30

New England Foundry Conference
Massachusetts Institute of Technology
Cambridge, Mass.

✦ ✦

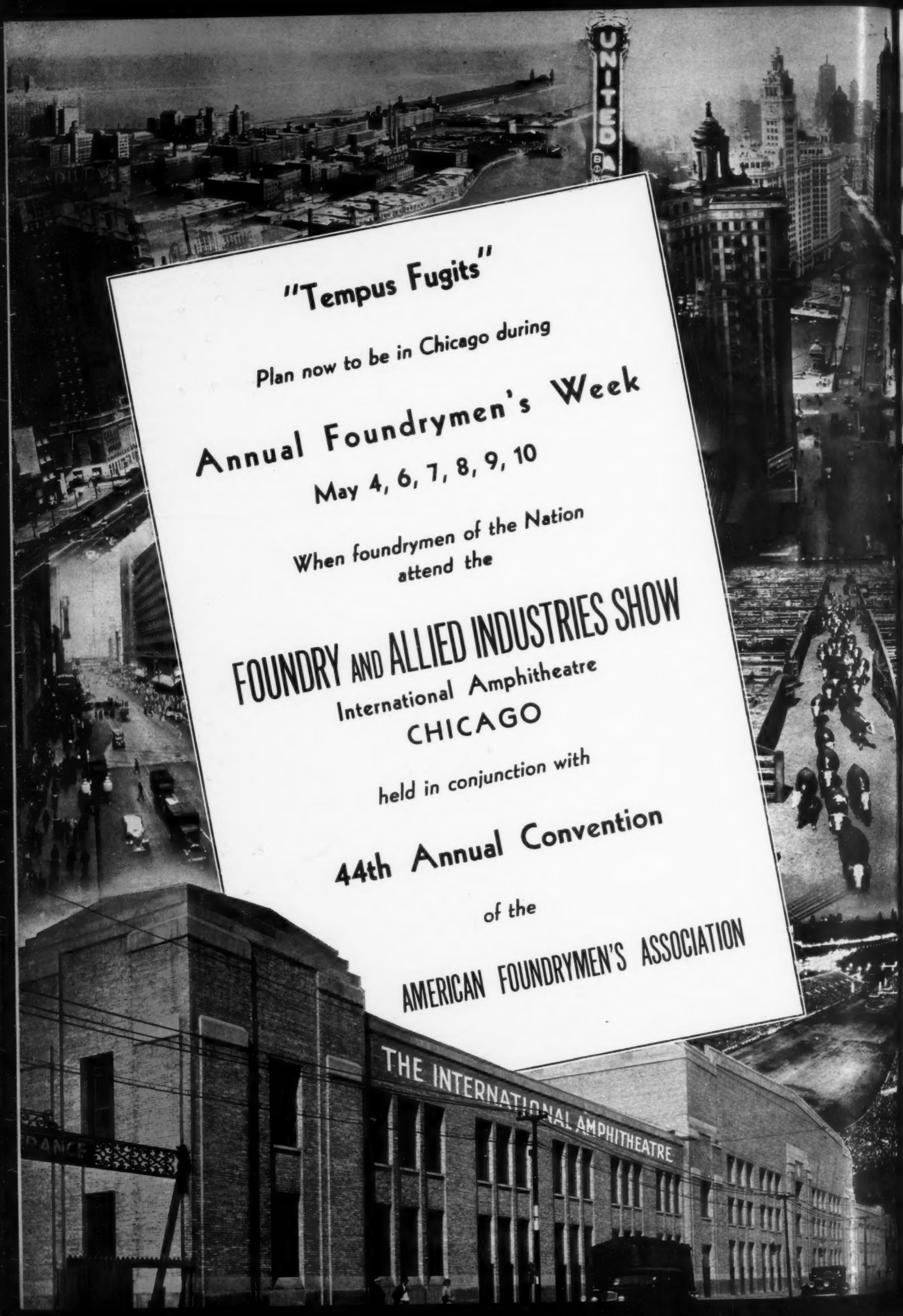
March 30

Rutgers Regional Conference
Metropolitan N. Y.-N. J. and Philadelphia Chapters
Engineering Building, Rutgers University
New Brunswick, N. J.

✦ ✦

April 12-13

Michigan State Foundry Conference
Michigan State College,
East Lansing, Mich.



"Tempus Fugits"

Plan now to be in Chicago during

Annual Foundrymen's Week

May 4, 6, 7, 8, 9, 10

When foundrymen of the Nation
attend the

FOUNDRY AND ALLIED INDUSTRIES SHOW

International Amphitheatre
CHICAGO

held in conjunction with

44th Annual Convention

of the

AMERICAN FOUNDRYMEN'S ASSOCIATION